ATTRIBUTING INPATIENT CARE TO DIABETES: THE CASE OF MEDICARE FOR THE ELDERLY IN TEXAS, 1995

By

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PREFACE

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Specific Aims: This study estimated the accuracy of alternative numerator methods for attributing health care utilization and associated costs to diabetes by comparing findings from those methods with findings from a benchmark denominator method.

Methods: Using Medicare's 1995 inpatient and enrollment databases for the elderly in Texas, the researcher developed alternative estimates of costs attributable to diabetes. Among alternative numerator methods were selection of all records having diabetes as a principal or secondary diagnosis, and a complex ICD-9-CM sorting routine as previously developed for study of diabetes costs in Texas. Findings from numerator methods were compared with those from a benchmark denominator method based on attributable risk and adapted from a study of national diabetes costs by the American Diabetes Association. This study applied age, gender and ethnicity specific estimates of diabetes prevalence taken from the 1987-94 National Health Interview Surveys to person-months of Medicare Part A, non-HMO enrollment for Texas in 1995. Outcome measures were number of persons identified as having diabetes using alternative definitions of the disease; and number of hospital stays, patient days, and costs using alternative methods for attributing care and costs to diabetes. Cost estimates were based on Medicare payments plus deductibles, co-pays and third party payments.

Findings: Numerator methods for attributing costs to diabetes produced findings quite different than those from the benchmark denominator method. When attribution was based on diabetes as principal or secondary diagnosis, the resulting estimates were significantly higher than those obtained from the denominator method. The more complex sorting routine produced estimates near the lower boundary for the confidence interval associated with estimates from the benchmark method.

Conclusions: Numerator methods employed by previous researchers poorly estimate the costs of diabetes. While crude mathematical adjustment can be made to the respective numerator approaches, a more useful strategy would be to refine the complex sorting routine to include more hospitalizations. This report recommends approaches to improving methods previously employed in study of diabetes costs.

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CHAPTER I. STATEMENT OF THE PROBLEM

Diabetes is generally classified as insulin-dependent diabetes mellitus (IDDM) or non-insulin-dependent diabetes mellitus (NIDDM). About 90%-95% of persons with diagnosed diabetes have NIDDM and, while prevalence of physician-diagnosed diabetes has increased in the U.S. over the last 40 years, an estimated one-third of persons with NIDDM are currently undiagnosed. Prevalence of diagnosed diabetes increases with age, and it exceeds 10% among persons ages 65 and older.[1] Most people ages 45 and older with diabetes have NIDDM.[2] Other forms of diabetes are Gestational Diabetes Mellitus (GDM) and Diabetes Secondary to Other Conditions.[3]

In 1994, U.S. hospitals listed diabetes among discharge diagnoses for about 3.5 million hospitalizations with almost 25 million hospital days. Diabetes was the principal (first-listed) diagnosis for about half a million discharges.[4] Persons with diabetes have a high risk of developing chronic complications including ophthalmic, renal, neurological, cardiovascular, cerebrovascular, and peripheral vascular diseases. Many hospitalizations are for diabetic complications such as cardiovascular diseases and diabetic ketoacidosis.[5] Diabetes is the most common cause of end-stage renal disease,[6] and diabetes accounts for almost one-half of non-traumatic lower-extremity amputations.[7-8] Estimates of the costs of such complications suggest that they are formidable.[9]

Diabetes contributes to escalating health care costs, partly due to rapid growth in the number of elderly persons in the population,[10] but mainly due to increasing incidence and prevalence due to factors other than aging.[11] Diabetes is particularly important in Texas because of the presence of a large Mexican origin population at high risk for the disease and its complications.[12-14]

Many diabetic complications are not specific to diabetes. Thus, it is difficult to attribute health care utilization and costs to the disease. There have been several studies of U.S. diabetes costs, and they have varied in their definitions of persons with diabetes and their methods for attributing utilization and cost. Differing cost estimates may reflect changes in demography, disease incidence and prevalence, propensity to diagnose, record-keeping, value of money, greater use of services, use of higher quality services, or study methods.[15]

Because of the difficulty in sorting medical records for diabetic complications, we are uncomfortable with simplistic methods which select for diabetes as principal and/or secondary diagnosis, and uncertain about the more complex methods which rely on more complicated, and unvalidated, searches for combinations of diagnoses. Several researchers have dealt with this problem by calculating attributable risk for health care utilization and costs as a consequence of diabetes. However, the method has its own problems and, in many research situations, the requisite population denominators with known prevalence of diabetes are not readily available.

It would be useful to compare the respective numerator methods against a benchmark denominator method which estimates impacts of diabetes on the basis of attributable risk. If a numerator method yields an estimate that is similar to findings from the denominator approach, then it might be applied with greater confidence in research situations, such as public hospitals, where clear population denominators are unavailable. Such comparative analysis requires that other factors, such as methods for identifying persons with diabetes or for costing their care, be held constant.

Specific aims of this study were to:

1) Compare and select among three methods for identifying persons with diabetes within a hospital billing database; and

2) Compare five numerator methods for attributing hospital utilization and costs to diabetes with a benchmark denominator method.

The literature on diabetes costs among the elderly uses three alternative definitions of persons with diabetes. The definitions rely on the International Classification of Diseases (ICD-9-CM)[16] as follows:

1) Presence of Diabetes Mellitus (ICD 250) among principal or secondary diagnoses for any hospital stay during the study year;

2) Additional allowance for presence of Hypoglycemia (251.0 or 251.2); or

3) Additional allowance for Diabetic Retinopathy (362.0) or Poisoning by Insulins and Antidiabetic Agents (962.3).

The researcher expected that addition of Hypoglycemia would result in a larger count of diabetic persons than use of ICD 250 alone (Hypothesis 1.1), but that little would be added from 362.0 and 962.3 (1.2).

1.1 H_0 Addition of ICDs 251.0 and 251.2 yields no more individuals than use of 250 only.

H_1 Addition of ICDs 251.0 and 251.2 yields more individuals than use of 250 only.

1.2 H_0 Addition of ICDs 362.0 and 962.3 yields no more than 250, 251.0 and 251.2.

H_1 Addition of ICDs 362.0 and 962.3 yields more than 250, 251.0 and 251.2.

The researcher compared six methods, drawn from the literature, for attributing hospital utilization and costs to diabetes (see Table 1). Five were numerator methods:

1) **Diabetes as Principal Diagnosis** - Records with diabetes as principal (first-listed) diagnosis;

2) **Diabetes as Principal or Among Secondary Diagnosis** - Records with diabetes as principal diagnosis or among secondary diagnoses;

3) **Clearly Attributable to Diabetes** - Records defined as "clearly attributable to diabetes" given that the patient is known to have diabetes;[17-18]

4) **Clearly or Probably Attributable to Diabetes** - Records defined as "clearly or probably attributable to diabetes" given that the patient is known to have diabetes;[17-18] and

5) **All Care for Persons with Diabetes** - All records for persons with diabetes regardless of diagnoses.

Table 1
Methods for Attributing Health Care Utilization and Cost to Diabetes

TRADITIONAL NUMERATOR METHODS

Diabetes as Principal Diagnosis - Minimum estimate. Incorrectly excludes cases where diabetic complications are first-listed.

Diabetes as Principal or Among Secondary Diagnoses - Intermediate estimate. Incorrectly includes care for unrelated conditions and independent non-specific complications when diabetes is noted on record. Incorrectly excludes care for diabetic complications when diabetes is not noted.

NUMERATOR METHODS ADAPTED FROM WARNER ET AL.[17-18]

Requires record matching among individuals. See Appendix A for details.

Clearly Attributable to Diabetes - Selects records of persons with diabetes where principal diagnosis is diabetes or a complication specific to diabetes. Yields a higher minimum estimate than selection for diabetes as principal diagnosis.

Clearly or Probably Attributable to Diabetes - Selects records clearly attributable to diabetes plus records of persons with diabetes when principal diagnosis is among selected non-specific diabetic complications which are probably attributable to diabetes given that the patient is known to have diabetes. Yields intermediate estimate. Not clear if it improves on principal-secondary method. Incorrectly includes unrelated cases where principal diagnosis is one of selected non-specific complications. Incorrectly excludes some cases where principal diagnosis is a non-specific complication of diabetes, but not "probably attributable to diabetes".

All Care for Persons with Diabetes - Maximum estimate. Includes care for non-specific complications not resulting from diabetes, and for unrelated conditions.

DENOMINATOR METHOD ADAPTED FROM BY RAY ET AL.[19]

Requires record matching among individuals, and calculation of attributable risk using diabetic and non-diabetic population denominators. See Appendix B for details.

Treats records having a diagnosis of diabetes and a diabetes DRG as directly attributable to diabetes. Records with principal diagnoses from a list of chronic complications of diabetes, an appropriate complication DRG, and a secondary diagnosis of diabetes are potentially attributable to diabetic complications, and these are attributed on the basis of excess utilization and cost among the diabetic population in comparison to similar records among the non-diabetic population. Similar calculations for utilization with unrelated principal diagnoses, and for excess intensity of service associated with complications and unrelated conditions.

The denominator method adapted from Ray et al.[19] was employed as a benchmark for comparison with the five numerator methods. The denominator method considered the difference in per capita costs between persons with diabetes and persons without diabetes, and it used the formula for attributable risk to calculate excess cost among the population with diabetes.

The intermediate "principal or secondary diagnosis" numerator method would be acceptable if resulting utilization and cost estimates were little different than those from the benchmark denominator method (Hypothesis 2.1). Similarly, results from the "clearly or probably attributable" method also were expected to approximate those from the denominator method (2.2). In the event that results from both of these two numerator methods differed from those resulting from the denominator method, then the better numerator method would more closely approximate findings from the benchmark denominator method (2.3).

2.1 **H_0** Utilization and cost estimates from the "principal or secondary diagnosis" method will equal those from the benchmark denominator method.

H_1 Utilization and cost estimates from the "principal or secondary diagnosis" method will not equal those from the benchmark denominator method.

2.2 **H_0** Utilization and cost estimates from the "clearly or probably attributable" method will equal those from the benchmark denominator method.

H_1 Utilization and cost estimates from the "clearly or probably attributable" method will not equal those from the benchmark denominator method.

2.3 **H_0** Estimates from the "clearly or probably attributable" method will be no closer to those from the benchmark denominator method than will estimates from the "principal or secondary diagnosis" method.

H_1 Estimates from the "clearly or probably attributable" method will be closer to those from the benchmark denominator method than will estimates from the "principal or secondary diagnosis" method.

The researcher verified that the "clearly attributable" method selected only persons with diabetes (Hypothesis 2.4); that hospital records always noted presence of diabetes on records that were "clearly or probably attributable" (2.5); and that records of persons with diabetes that were not "clearly or probably attributable" omitted mention of diabetes (2.6).

2.4 H_0 Diagnoses defined as "clearly attributable" are exclusive to records of persons with diabetes.

H_1 Diagnoses defined as "clearly attributable" are not exclusive to records of persons with diabetes.

2.5 H_0 All records of persons with diabetes which are "probably attributable to diabetes" note the presence of diabetes.

H_1 Some records of persons with diabetes which are "probably attributable to diabetes" do not note the presence of diabetes.

2.6 H_0 No records of persons with diabetes which are not "clearly or probably attributable" to diabetes note the presence of diabetes.

H_1 Some records of persons with diabetes which are not "clearly or probably attributable" to diabetes note the presence of diabetes.

While the first set of hypotheses was used to select the most useful definition of a person with diabetes, the second set dealt with the problem of picking the more useful numerator method for estimating costs of caring for persons with diabetes. Hypotheses 2.1 through 2.3 directly addressed this problem, and hypotheses 2.4 through 2.6 performed checks on the validity of the diagnostic data.

CHAPTER II. REVIEW OF THE LITERATURE

Studies of diabetes costs generally employ a cost-of-illness technique.[20] The method includes estimates of direct and indirect costs of illness. Direct medical costs include costs of hospitalization, physician services, outpatient services, and other types of health care. Indirect costs account for lost productivity from short-term and long-term disability and from premature mortality. Most estimates are prevalence-based, that is, they consider current costs of prevalent cases, rather than future costs of incident cases.[21] Estimates of prevalence are combined with estimates of health care utilization and lost productivity, along with attendant costs, to arrive at estimates of total direct and indirect costs of the disease.[22]

A. Studies of Inpatient Diabetes Costs

This study explored costs associated with inpatient care. Thus, while many of the studies examined in this section estimated costs for many types of health care and often for indirect costs, this review was limited to the methods used to address direct medical costs of inpatient care.

Entmacher based an estimate of U.S. hospitalization costs in 1973 on the National Hospital Discharge Survey (NHDS) which provided diagnostic information for a national sample of hospital discharges. Diabetes was defined as presence of the International Classification of Diseases (ICD-9-CM)[16] code for Diabetes

Mellitus (ICD 250), and only those records with diabetes as principal (first-listed) diagnosis were attributed to the disease. The number of attributed inpatient days was multiplied by an average cost per day obtained from industry sources to estimate that inpatient costs of diabetes were about $0.8 billion.[23]

Entmacher et al. used data from the National Medical Care Expenditure Survey (NMCES) to estimate U.S. diabetes costs in 1977. The population-based NMCES collected self-reports on diabetes history and hospitalization, and it included a follow-up survey of facilities. The researchers estimated total inpatient costs for persons with and without diabetes. Those data, combined with estimates of prevalence of diagnosed diabetes from the National Health Interview Survey (NHIS), suggested that the average person with diabetes cost $751 more than the average person without diabetes, and that the total excess cost of hospitalization among diabetic persons was $3.8 billion (author's calculation).[24] However, this statistic does not accommodate the fact that people with diabetes are likely to be older than the rest of the population, nor does it consider ethnicity or socioeconomic status are predictors of diabetic status.

Entmacher et al. provided an additional, synthetic estimate for U.S. inpatient diabetes costs in 1980. The number of hospitalizations with Diabetes Mellitus (ICD 250) as principal (first-listed) diagnosis and those with Diabetes Mellitus among several secondary diagnoses were estimated from the NHDS. Using an average length of stay of 10.5 days and an average nationwide cost per hospital day, obtained from industry sources, the researchers estimated that $5.8 billion was spent for hospitalizations with diabetes as principal or among secondary diagnoses. Two estimates were given for hospitalization costs with diabetes as first-listed diagnosis, $1.8 billion and $2.2 billion.[24]

The Carter Center of Emory University used the NHDS to estimate number of hospitalizations and patient days associated with diabetes in the U.S. in 1980. Diabetes was defined as presence of the ICD code for Diabetes Mellitus (250), but also allowed for Diabetes Mellitus Complicating Pregnancy (648.0), Syndrome of Infant of a Diabetic Mother (775.0, 775.1), and Poisoning by Insulins and Antidiabetic Agents (962.3). Using an average cost of $250 per hospital day, obtained from industry sources, the researchers estimated total cost with diabetes among any of seven discharge diagnoses at $6.2 billion. Hospital stays with diabetes as first-listed diagnosis cost about $1.7 billion (author's calculation).[25]

Hodgson and Kopstein allocated U.S. costs of medical care in 1980 across broad categories of diseases on the basis of principal diagnoses.[26] Huse et al. adjusted findings to the year 1986 to account for medical price inflation and population growth. Then, from the NHDS, they found the proportion of hospital days having Endocrine, Nutritional and Metabolic Diseases and Immunity Disorders (ICDs 240-279) as principal diagnoses which specified Diabetes (ICD 250) as the principal diagnosis. Similar apportionment was done for four other general categories of diseases to isolate days attributable to selected complications. Data on prevalence of diagnosed diabetes were taken from the NHIS and adjusted to reflect the estimated share of diabetes that is NIDDM within selected age groups. Similar data were obtained on relative prevalence of the selected conditions recognized as NIDDM-related conditions, and they calculated the fraction of the respective enumerated conditions attributable to NIDDM. The researchers estimated that $4.9 billion in hospital costs were associated with NIDDM, including $2.6 billion directly and the rest from complications.[27]

A study sponsored by the American Diabetes Association (ADA) used data from the 1986 NHDS to estimate U.S. hospital days in 1987 directly attributable to diabetes plus days attributable to chronic complications, to increased propensity to hospitalize diabetic patients for unrelated conditions, and to increased length of stay for unrelated conditions. Hospitalizations directly attributable to diabetes were defined as those with a diagnosis of Diabetes Mellitus (ICD 250) or Hypoglycemia (251.0 or 251.2) and a corresponding diabetes Diagnostic Related Group (DRG 294 or 295). Hospitalizations attributable to diabetic complications had a diagnosis of a specified chronic complication, a corresponding DRG, and a secondary diagnosis of diabetes. Age-specific utilization rates due to complications were calculated for the diabetic and non-diabetic populations on the basis of the NHIS, and excess utilization was obtained by multiplying persons with diabetes by the difference in utilization rates. All remaining hospitalizations with a diagnosis of diabetes were viewed as potentially attributable to an increased propensity to hospitalize diabetic patients. As was done for chronic complications, the researchers calculated the difference in utilization rates for diabetic and non-diabetic populations, and multiplied by the number with diabetes. For the hospitalizations for complications and unrelated conditions, average length of stay was calculated for records with and without mention of diabetes, and used to estimate the number of days attributable to increased intensity of care for diabetic persons. The combined total 11.5 million excess days was multiplied by $572, an average figure supplied by the American Hospital Association, to estimate that inpatient care attributable to diabetes cost $6.6 billion.[28]

A study of Mutual of Omaha 1988 billing data examined a large sample of insured persons ages 25-64. The researchers defined persons having any inpatient or outpatient claim with a principal or secondary diagnosis of diabetes (ICD 250) as having diabetes. The researchers then searched all claims during the year for the persons with diabetes without regard to mention of diabetes in the record. Persons with diabetes, who made up 3.1% of the sample, generated 8.3% of total charges. Of charges associated with diabetic persons, 81% was for inpatient care.[29]

A more recent study conducted for the ADA estimated total U.S. inpatient costs of diabetes in 1992, including inpatient physician care, at $37.2 billion. The researchers used methods similar to those used for the ADA sponsored study of costs in 1987. The researchers took estimates of prevalence of diagnosed diabetes (3-year average) by age group from the NHIS, and added half of annual incident cases using data from the Centers for Disease Control. The remaining population was considered non-diabetic. This approached was conservative in that it assumed that average health care costs for persons with undiagnosed diabetes were no higher than costs for persons without diabetes, and did not account of half of mortality among persons with diabetes. The number of hospitalizations and days of stay for non-Medicare patients were estimated from the 1990 NHDS. Medicare estimates came from the MEDPAR file, a census of inpatient stays billed to Medicare. In both files, the researchers considered persons with any hospitalization having a principal or any secondary diagnosis of Diabetes Mellitus (ICD 250) or Hypoglycemia (251.0 or 251.2) as having diabetes. All others were non-diabetic. For the MEDPAR file, they used unique personal identifiers to also examine all records for persons with diabetes to determine whether the principal diagnoses were from a specified list of diabetic complications. For both files, hospitalizations and days of stay for persons with diabetes having a diagnosis of diabetes or hypoglycemia and a diabetes-related DRG (294 or 295) were considered directly attributable to diabetes. Hospitalizations of persons with diabetes having a principal diagnosis of a specified chronic complication of diabetes, a secondary diagnosis of diabetes or hypoglycemia, and a specified complication DRG were attributed to complications of diabetes. These were grouped into eight categories - neurologic, three cardiovascular groups (heart, artery or vein), endocrine/metabolic, ophthalmic, renal, and other. Using estimates of population prevalence, utilization rates were calculated for each group of complications for diabetic and non-diabetic populations, with the differences attributed to diabetes. Similar calculations were done for all other hospitalizations of persons with diabetes to estimate excess patient days among persons with diabetes for unrelated conditions, and excess average days of stay was calculated for persons with diabetes when hospitalized for chronic complications of diabetes or unrelated conditions. Cost data from the 1987 National Medical Expenditure Survey (NMES) were inflated to 1992 and used to estimate average cost per day for inpatient care and associated physician services. Averages were specific to days directly attributable to diabetes, its complications, unrelated conditions, and added length of stay for complications and unrelated conditions.[19]

The reader will note that, due to an ambiguity in the manner in which the researchers described their study methods, there is an alternative interpretation of the approach employed in the ADA study. Specifically, instead of requiring that the *principal* diagnosis be diabetes or a complication of diabetes for the record to be attributed to diabetes, it is possible that the method attributed records having a *principal or secondary* diagnosis fof a diabetic complication, so long as the record also met the other criteria (appropriate DRG and a diagnosis of diabetes). However, this would mean that, among the records attributed to complications, there was potential for attribution of a given record to more than one type of complication, because the DRG criteria were sometimes identical for different types of complications; and, while the researchers stated that the complication categories were mutually exclusive, they did not describe a method for making them so.[19]

Rubin et al. used the 1987 NMES for data on prevalence, utilization and cost of care to estimate national average cost of inpatient care for diabetic and non-diabetic populations. Adults with diabetes were identified from self-reports on whether a doctor had ever told them that they had diabetes (or high blood sugar); or, if the respondent did not answer the question, then if he or she had a record of taking insulin or a diabetic drug, or had a health care encounter with a principal or secondary diagnosis of Diabetes Mellitus (ICD 250), Hypoglycemic Coma (251.0), Diabetic Retinopathy (362.0) or Diabetes Mellitus Complicating Pregnancy (648.0 - excludes Gestational Diabetes). Children were considered diabetic if they had a record of taking insulin. A more restrictive group of confirmed diabetics included only those persons above who also had a record of taking insulin or another diabetic agent, a record of purchasing diabetic items such as syringes or test paper, or a health care encounter with a principal or secondary diagnosis as above. Prevalence estimates specific to age, gender and race were applied to the 1992 U.S. population. The researchers calculated average payments for the population with diabetes for inpatient care for all payors, including out-of-pocket expense and provision for unreimbursed care, and compared with average payments for non-diabetics. Expenditure data were adjusted to 1992 using inflation factors specific to different payors. The average person with diabetes cost $4,663 more for inpatient care than the average non-diabetic. Although the data were not age-adjusted, this figure suggests a total excess cost of about $52 billion (author's calculation) and excess cost among the smaller population of confirmed diabetics was about $46 billion (author's calculation).[30]

Warner et al., in a study of direct and indirect costs of diabetes in Texas, used billing databases to estimate many of the direct cost components.[17-18] The approach is significant in that, rather than relying on survey data, the researchers used administrative databases, a resource which is likely to be employed more often in the future, particularly by managed care organizations, for evaluation of costs.[15] Warner et al. searched the respective billing databases, usually for the year 1992, for persons with any record having a principal or secondary diagnosis of Diabetes Mellitus (ICD 250) or Hypoglycemia (251.0 or 251.2). All records for those individuals were identified within the respective databases, regardless of diagnoses. On the basis of expert opinion, the researchers modified the list of diabetic complications employed by Ray et al.[19] They listed seventeen principal diagnoses of diabetes and its specific complications, and records for persons with diabetes having those principal diagnoses were viewed as "clearly attributable" to diabetes. Then, they developed a longer list of principal diagnoses of non-specific complications of diabetes which were screened to include 159 principal diagnoses or combinations of diagnoses having a high probability of attribution to diabetes given that the patient was known to have diabetes. For many of the principal diagnoses, additional requirements were a secondary diagnosis of diabetes or selected DRGs.[17-18] To arrive at an estimate of Medicare inpatient costs of diabetes, Warner et al. examined a billing database containing both inpatient and ambulatory surgery records. After sorting the records as described above, costs of inpatient care were based on amounts paid by Medicare plus the inpatient deductible. Hospitalization costs "clearly attributable" to diabetes ($80 million) were viewed as a minimum estimate. Costs resulting from the selected non-specific complications were added to estimate "clearly or probably attributable" costs of diabetes ($387 million). As in the earlier ADA study,[19] the latter records were grouped by broad types of complications. A third estimate accounted for "all costs for persons with diabetes" for inpatient Medicare, regardless of diagnoses ($831 million).[17-18]

The ADA sponsored another study of U.S. national diabetes costs for the year 1997. That study, performed by some of the same authors as the earlier study of costs in 1992, was, with some variation, similar to the earlier study. To estimate costs of inpatient care, the 1994 NHDS was employed to estimate discharges and days associated with diabetes, and the 1987 NMES was used to estimate prevalence and unit cost per day of care. The consumer price index for hospital and related services was applied to adjust the figures to the year 1997 for a finding of a U.S. national expenditure of $27.4 billion for hospital care and associated physician services attributable to diabetes. The figure for 1997 was lower than the earlier figure for 1992 and the difference was attributed partly to a trend toward shorter hospital stays and a shift from inpatient to outpatient treatment, but mainly to a change in analytic methods from analysis of excess complications for people identified within a database to use of external survey data regarding presence of complications within the population of persons with diabetes.[31]

A prospective study of a 5% national sample of elderly, non-HMO, Medicare users examined relative costs for those having record of diabetes compared to those having no record of diabetes. Persons with diabetes were identified on the basis of any inpatient claim, or at least two outpatient claims, having a principal or secondary diagnosis of diabetes (ICD 250). Like the ADA and Warner studies, the researchers employed a list of ICDs to select conditions specific to diabetes and conditions strongly associated with diabetes. Another list was used to select for comorbidities on the basis of their potential impact on length of hospital stays, cost and mortality. Overall, in the 1994 base year, the average person with diabetes cost 1.7 times the average for persons without diabetes. This differential diminished only slightly over the two subsequent years (1.5 and 1.6). The population with diabetes was hospitalized 1.6 times as often in the base year, and had longer average hospital stays; and they had twice the likelihood of admission to intensive care. The 1994 average cost for persons with diabetes was $6,525 compared to $3,760 for persons without diabetes. Individuals with diabetes who had high costs in the initial study year tended to regress toward the mean over the subsequent two years, and costs for the lower cost individuals did not necessarily increase.[32] Although the study excluded Medicare enrollees who did not use covered services during the study year, the bias was probably minimal because both inpatient and outpatient billing data were employed to select the study population.

Hodgson and Cohen[33] also estimated 1997 U.S. national expenditures for diabetes and for chronic complications associated with diabetes using the list of ICD codes employed for the 1997 ADA study.[31] In contrast to the ADA study, the researchers scaled findings for each cost component to published estimates of total national expenditures for that component. For example, total inpatient costs estimated for persons with and without diabetes were adjusted proportionately to sum to the total figure for national expenditures on inpatient care. The MEDPAR billing database for Medicare was employed to estimate inpatient days and costs for the elderly. For Veterans Administration (VA) hospitals, 1994 data were obtained to estimate hospital days attributable to diabetes and costs were assumed to be equal for all types of VA hospitalizations. For the rest of the population, the 1993 NHDS was used to estimate number of hospital days attributable to diabetes, and costs were estimated from the NMES. For estimates associated with chronic complications and excess costs for unrelated diagnoses, the researchers calculated the population attributable risk based on data obtained from the NHIS. The researchers argued that their approach under-stated costs due to a downward bias stemming from the calculation of risk from one data source and then applying that information to utilization and cost data from other sources. Further, the researchers argued that the downward bias was not as severe as it would have been had they employed the calculation for attributable risk among the exposed as was done in the ADA study of 1997 costs.[34] The resulting estimate for hospital costs was $25 billion and, allowing for one standard error in each direction, the range was between $17 billion and $34 billion.[33]

The differences between the two studies are informative. Both teams of researchers looked at the National Hospital Discharge Survey for data for hospitalizations, and both gathered charge information from the National Medical Expenditure Survey even though that survey was conducted fully ten years prior to the study year. The ADA researchers multiplied units of service (hospital days) times the average charge per unit, and then inflated by the medical component of the consumer price index.[31] Hodgson and Cohen, on the other hand, scaled their estimates to published figures for national expenditures for each type of service. Thus, their approach required no price index information to make the adjustment.[33]

B. Methods of Attribution

Studies of the costs of diabetes have employed a variety of methods, and it is difficult to compare findings from the various studies simply because of methodological differences.[15]

There are two aspects to attributing health care to diabetes: (1) How shall a person with diabetes be identified; and (2) How shall utilization be attributed? The earlier studies, which did not address diabetic complications, skipped the first step and defined utilization simply by presence of one or more ICD codes among principal or several secondary diagnoses. Those studies which addressed complications generally identified persons with diabetes and located all of their records, even those without mention of diabetes.

The simplest definition of diabetes was presence of the ICD code for Diabetes Mellitus (ICD 250) among the discharge diagnoses. Most common was presence of Diabetes Mellitus (250) or Hypoglycemia (251.0 or 251.2), although two studies[25,30] allowed for other codes. Of these, Diabetic Retinopathy (362.0) and Poisoning by Insulins and Antidiabetic Agents (962.3) were relevant to this study of elderly Medicare beneficiaries in Texas. In those studies which estimated diabetes prevalence, presence of diabetes was defined as an affirmative response in a population survey. Questions about diabetes have differed in the various national surveys.

Methods for attributing records of diabetic persons to diabetes have varied. Earlier studies selected records with diabetes as principal diagnosis or among several secondary diagnoses. Several studies employed detailed lists of principal and secondary diagnoses, or combinations of diagnoses (and sometimes DRGs), to sort records. In the denominator studies, the lists were generally used to stratify groups of conditions for comparative analysis.[19,31-33] In those studies, attributable risk calculations were performed separately for major groups of complicating conditions, or even across groups of unrelated conditions, while, in the numerator study, the lists were employed to more directly attribute individual records to diabetes.[17-18]

National estimates of inpatient diabetes costs have made extensive use of survey data. The National Hospital Discharge Survey (NHDS) is particularly useful because it provides diagnostic data for a sample of discharges. Three studies sorted NHDS records for presence of diabetes, summed associated patient days, and applied industry data on average cost per day.[23-25] Recently, Warner et al. used billing records in similar fashion, except that costs were based on payments.[17-18] While definitions of diabetes varied, as did the sorting routines, the studies used numerator data and did not consider population denominators.

Reliance solely on numerator data is problematic. Many diabetic complications are common among persons who do not have diabetes. Thus, when a person with diabetes has a non-specific complication of diabetes, it is not clear whether that condition results from diabetes, whether it would be present in the absence of diabetes or, if independent, whether diabetes aggravated the condition. The structure of diagnostic information in the billing record does not clarify. Standard insurance forms request a principal (first-listed) diagnosis, and the provider may list up to several relevant secondary diagnoses. While the forms do not request diagnoses unrelated to the health care incident, no doubt many providers list any prominent co-morbid conditions. Thus, even if the provider were able to distinguish independent complicating conditions, such distinctions would not be evident in the billing record. Selection for medical records with diabetes, however defined, as principal diagnosis would be too exclusive as it would overlook many costs of complications.[35] Indeed, many records of persons with diabetes, which list a complication of diabetes as principal diagnosis, may omit mention of diabetes itself because there is substantial under-reporting of diabetes as a secondary diagnosis in claims and medical records, especially among people who are older and who have several co-morbidities.[36] For example, about 40% of inpatients with diabetes do not have diabetes listed among their discharge diagnoses.[37-38]

Selection for all records with mention of diabetes would be too inclusive. Warner et al. tried to address this problem by collecting all records of persons with diabetes, even those not mentioning diabetes, and sorting for principal diagnoses of selected complications which were “probably attributable” to diabetes given that the patient was known to have diabetes.[17-18] The method assumes that health care incidents are fully attributable or not attributable to diabetes, and that errors of inclusion and exclusion balance. The list of principal diagnoses defined as "clearly or probably attributable” to diabetes (given that the patient was known to have the disease) was based on expert opinion, and has not been empirically tested.

In theory, denominator methods are more promising. Given two similar populations, one with diabetes and one without diabetes, excess prevalence of non-specific diabetic complications and excess health care utilization and cost among those with diabetes, on a per capita basis, can be attributed to diabetes because the population without diabetes establishes benchmark rates for health care utilization and cost. The method can account for situations where diabetes aggravates complications which are independent of diabetes, for a greater propensity to hospitalize for unrelated conditions, and for increased intensity of service. The researchers who employed population denominators first estimated prevalence of diabetes, usually derived from the National Health Interview Survey (NHIS), and calculated excess average utilization among persons with diabetes compared to non-diabetic populations.[19,24,28-33] While they varied in the details of their calculations, some using population attributable risk and others using attributable risk among the exposed, from a theoretical standpoint, the researchers all addressed the problem by estimating excess average utilization by the population with diabetes.

The denominator method assumes that the two populations, those with and without diabetes, can be clearly delineated and that there are no unmanaged confounders, such as age or ethnicity which vary by diabetes or health care utilization. Such problems have led some researchers to individually match diabetic and non-diabetic populations for cost studies in managed care settings.[39-40] Indeed, managed care organizations have a unique ability to evaluate diabetes costs, not only because of their clear, well-defined populations, but also because of their ability to build comprehensive databases on patient care and resource use associated with that care.[41]

The population-based approach does not consider the possibility that independent factors may simultaneously influence diabetes and the chronic complication of interest. Consider, for example, obesity which contributes both to diabetes and to several other conditions. While some of the excess for those co-morbid conditions among persons with diabetes might be "attributable to diabetes", there is the potential for independent effects, and the calculations for attributable risk do not factor out those independent effects.[33]

Denominator studies of diabetes costs require data on population prevalence of diabetes, health care utilization, and costs of care. Of the national studies using the denominator methods, only two[30,32] obtained all three pieces of information from the same source. The others obtained utilization, prevalence and cost data from separate sources. Utilization data frequently came from the NMCES, NHDS or Medicare records. Prevalence information most often came from the NHIS, and cost data often were taken from industry averages. This synthetic aggregation of findings from varying sources has generated some controversy, and researchers are increasingly aware that, in such situations, the calculations for attributable risk can yield biased results when they are employed to estimate the excess impact of diabetic complications among those with diabetes.[15,33-34]

The problem stems from a distinction between Population Attributable Risk (AR_p) and Attributable Risk among the Exposed (AR_e). The former, also known as the Etiologic Fraction, is the proportion of new cases in a given time period that are attributable to the risk factor of interest, and it is calculated as:

$$AR_p = p\,(RR - 1) / [p\,(RR - 1) + 1]\text{, where}$$

p = the proportion of the population that has diabetes, and
RR = the relative risk.

The calculational formula can be employed across multiple categories of exposure.[42] In population-based studies of diabetes costs, the formula has been employed for calculation of Attributable Risk for various diabetic complications where the Relative Risk applies to the risk of presence of the respective complications.[15,33-34]

The Attributable Risk among the Exposed (AR_e) is the proportion of exposed cases that are due to the risk factor of interest, and it is calculated as: (RR – 1) / RR where RR = the Relative Risk.[42] This method also has been employed in population-based studies to calculated the risks for various diabetic complications.[15,33-34]

In normal situations, the two methods are sufficiently similar so that either can be employed to calculate the number of cases which are attributable to the risk factor of interest. However, in studies of those diabetes costs attributable to complications, where the prevalence and cost information are taken from different sources, the costs attributed to the complications are under-estimated, and the bias is greater for the Population Attributable Risk.[34] Thus, given that the national studies generally have drawn their information from multiple survey sources, we can rightfully question the accuracy of their findings. And, while calculation of attributable risk is appealing from a theoretical standpoint, there is a continuing need to improve on the methods or to find alternative methods.

C. Cost

In the lay sense, the term "cost" refers to an amount paid and, at times in the health care field, the term is incorrectly applied to charges. From the perspective of society, however, cost refers to the economic value of all resources consumed to treat a particular health problem, and economists measure those resources in terms of "opportunity costs" - the value those resources would have generated in their next best alternative use. Social costs include direct costs of medical care and indirect costs from lost productivity due to short-term and long-term disability and to premature mortality.[43-44] The studies of hospitalization costs used price or charge information in proxy for direct medical costs.

In a number of studies, average cost per hospital day was obtained from industry sources describing average private insurance payments for inpatient care. At times, when information is available only for charges, the data can be adjusted by cost-to-charge ratios. A cost-to-charge ratio is calculated by dividing total operating cost by total charges, usually for a facility but sometimes for departments within the facility. The calculation assumes that the facility's (or department's) mark-up is identical across all patients.[43]

Other studies have used amounts paid for care. In more perfect markets, prices are useful proxies for opportunity costs. However, the health care market has barriers to entry, insurers which shield consumers from purchasing decisions, and limited information on treatments, prices and outcomes. These and other market imperfections limit the use of prices paid for health care as proxies for opportunity costs. To estimate Medicare inpatient costs in Texas, Warner et al. used Medicare payments under the DRG system.[17-18] While DRG payments reflect analyses of relative hospitalization costs, the DRG system averages prices across patients who have the same condition, but different characteristics, and information on variability of resource use within groups may be lost.[43]

There is a general distinction between what are called “top-down” and "bottom-up" methods for estimating costs.[44] The "top-down" approach allocates all costs on the basis of utilization due to the factor of interest in proportion to total utilization. The "bottom-up" approach builds on valuations of resources employed to provide medical services, typically by multiplying average cost associated with the factor of interest times utilization due to that factor. The various diabetes cost studies have differed in their approaches. The earlier studies, which usually looked only at primary diagnoses in national surveys, can be characterized as "top-down" studies. With some exceptions, most of the more recent studies used a "bottom-up" approach.[15] Among the exceptions are Hodgson and Kopstein who allocated costs across major disease categories,[26] and Huse et al. who expanded on the methods employed for that study.[27] More recently, Hodgson and Cohen scaled their findings to match national totals for health care expenditures by type of service.[33]

The reader should recognize that accurate estimation of diabetes costs is only a first step toward economic evaluation of the disease. Comprehensive cost estimates at an aggregate level may show the magnitude of overall costs, but they provide no information about costs for individual patients which might be useful for economic modeling.[27] For such purposes, cost per particular preventable event would be useful.[9] Similarly, an economic model for predicting individual costs on the basis of individual patient characteristics would be useful.[32] A cross-sectional, prevalence-based analysis of costs may not provide the more useful information that might be available from an incidence-based study.[45] Indeed, a more useful evaluation of diabetes costs would also help estimate the benefits of prevention and treatment options.[46] The gross measurement of cost, as applied in this study, is not intended to imply that any single intervention or collection of interventions could prevent all hospitalization costs.

D. Significance

This study contributes to methods for cost of illness studies, particularly to methods for attributing hospital utilization and costs to diabetes. The "benchmarking" of alternative numerator methods for attribution against a denominator method yielded previously unavailable data which can contribute to comparison among existing studies of diabetes costs and to planning for future studies. This was accomplished by systematic comparison of findings from application of differing definitions of diabetes, and of alternative numerator methods for attributing utilization and cost to diabetes with a benchmark denominator method. The researcher examined numerator methods to determine if they reasonably approximated findings from the denominator method. And the researcher examined the consequences of flaws in the denominator approach employed. Even if the numerator methods are less than adequate, researchers who lack appropriate denominators have a better sense of the direction and extent of resulting errors. Thus, the study clarifies reasons for disparate findings of previous studies, and informs future researchers about the implications of alternative choices regarding the definition of diabetes and methods for attribution.

While this study focussed on diabetes, there are a number of chronic and other diseases where the problems of costing are similar. This study sets forth a procedure for testing numerator methods, and researchers looking at other chronic diseases could adapt the procedure to their areas of specialty. More broadly, the study enhances information about the contribution of diabetes to other chronic diseases, and research efforts to parse out risk factors for those chronic diseases can benefit from increased understanding of the relationship between diabetes and its non-specific chronic complications.

This study informs public policy. In Texas, with a large and aging Hispanic population, there is concern that future costs of diabetes may be much greater than today. Attention to elderly minority populations focuses attention on the health status of vulnerable groups. Enhanced information about the relationship between diabetes and its complications and their costs supports priority setting, allocation of resources, and planning for prevention and treatment.

CHAPTER III. METHODS

Following comparison of, and selection among, three methods for identifying persons with diabetes, the researcher examined five numerator approaches for attributing their hospital utilization and associated costs to diabetes. The methods for identifying persons with diabetes, drawn from the literature were "nested", that is, each succeeding method was more inclusive. This initial step was necessary because the various studies of diabetes costs in the literature differed in their definitions of persons with the disease. Thus, the researcher wanted to know if a more inclusive approach yielded a meaningfully larger number of subjects.

The primary purpose of this study was to examine numerator methods for attributing costs to diabetes. Such numerator methods have been employed in situations where no meaningful population denominators were available, and it is not clear if the numerator methods used by previous researchers have yielded reasonably accurate answers. Findings from the numerator methods were compared with findings from a benchmark denominator method to determine the direction and extent of the errors resulting from those approaches.

Two of the numerator methods were viewed as lower-bound estimates and one was considered an upper bound estimate. Thus, of primary concern were the two intermediate numerator methods. The simpler of the two considered health care having a principal or secondary diagnosis of diabetes as attributable to diabetes, and the resulting estimate was expected to be high in comparison to that from the benchmark denominator method. The more complicated numerator method first identified persons with diabetes, then examined all records of their care for selected diagnoses or combinations of diagnoses and DRGs which were considered as "clearly or probably attributable" to diabetes, given that the patient was known to have diabetes. The method is based on professional opinion and has not been validated. Thus, the researcher had no expectations regarding the direction or degree of error.

A. Study Population and Measures

The study population was persons in Texas who had attained at least the age of 65 by the end of 1994 and were enrolled in the Medicare Part A hospitalization insurance program for the aged during 1995, but were not in a Health Maintenance Organization (HMO) plan for the duration of their 1995 enrollment. The population was selected because Medicare coverage is nearly universal and, therefore, appropriate for population-based research. Also, the very large number of persons enrolled is suitable for this type of research.[47]

Nationally, about 94.7% of elderly persons with diabetes were covered by Medicare in 1992, as were 95.4% of elderly persons without diabetes;[48] and less than five percent of Medicare beneficiaries were enrolled in HMOs in 1992.[49] Medicare beneficiaries under age 65 were excluded because most are disabled, often as a consequence of diabetes. Monthly enrollment data for 1995 for Texas, excluding months of HMO enrollment, were obtained from the Health Care

Financing Administration (HCFA), and were disaggregated by age, gender and ethnicity.

Estimates of population prevalence of diagnosed diabetes were constructed from eight successive years (1987-94) of information from the National Health Interview Surveys (NHIS). National estimates for Non-Hispanic White, Black, and Mexican-American groups were applied to Texas White/Other/Asian/Unknown, Black, and Hispanic/Native American enrollment, respectively. The NHIS interviewers asked:

-- During the past 12 months did anyone in the family have diabetes?,
-- Who was this?, and
-- During the past twelve months did anyone else have diabetes?[50]

The NHIS interview did not address undiagnosed diabetes and, given the large number of people who have diabetes that is not currently diagnosed, the resulting prevalence estimates are undoubtedly low. Undiagnosed diabetes may influence health care use when the care stems from diabetic complications and the diabetes goes undiagnosed. Thus, while pre-clinical diabetes is less likely to generate high costs, the medical care setting may result in initial diagnoses of diabetes and those newly diagnosed persons should correctly be counted in the population of persons with diagnosed diabetes. Ray et al. dealt with this problem by adding half of incidence to their prevalence estimates.[19] Such an adjustment required an overall increase by 0.43 percentage points for estimated prevalence among Texas Medicare beneficiaries ages 65-74 and 0.23 points among those age

75 and older.[2] The adjustment appears small. However, with about 10% prevalence of diabetes among the elderly, it was expected to result in a moderate increase in the total count of persons with diabetes and their person-months of Medicare enrollment.

Application of national survey data to Texas has potential for error if prevalence differs between state and national sub-populations. The researcher estimated male and female diabetes prevalence for three elderly ethnic groups (White/Other, Black, Hispanic/Native). Findings were calculated and presented for age groups 65-74, 75-84, and 85 and older.

Prevalence data were drawn from the NHIS for years 1987-94 during a period of increasing likelihood that persons with diabetes would be diagnosed as such. National survey data for the respective years were evaluated for secular trend toward increasing prevalence, and findings were employed to adjust hospital utilization and cost estimates for Texas constructed from the denominator method.

Utilization was defined alternately as number of hospitalizations and number of inpatient days of stay. The count of inpatient days subtracted date of admission from date of discharge, except same-day discharges were counted as one day of stay. Cost was defined as the amount paid by Medicare under the DRG system (including outlier payments, disproportionate share, indirect medical education, and capital payments) plus amounts paid by other parties (deductibles, copays, and payments by primary carriers).

The researcher analyzed the 1995 inpatient billing database for Medicare in

Texas. The database had about 660,000 records for acute care, short stay hospital discharges in 1995 with payments by Medicare; and it had individual identifiers which allowed identification of multiple hospitalizations of a single individual. Other fields of interest were:

- -- Age at end or prior year;
- -- Sex;
- -- Race (White, Black, Hispanic, Asian, Native American, Other);
- -- Length of stay in days;
- -- Amount reimbursed under the DRG system;
- -- Amounts paid by other parties (coinsurance amount, inpatient deductible, blood deductible, primary payor amount);
- -- Up to ten diagnostic codes (ICDs); and
- -- DRG code.

B. Analysis

The researcher compared three methods for identifying persons with diabetes:

1) Persons having any record with a principal or secondary diagnosis of Diabetes Mellitus (ICD 250);

2) Also persons having any record with a principal or secondary diagnosis of Hypoglycemia (251.0 or 252.2); and

3) Also persons having any record with a principal or secondary diagnosis of Diabetic Retinopathy (362.0) or Poisoning by Insulins and Antidiabetic Agents (962.3).

The researcher verified that inclusion of ICDs 251.0 and 252.0 resulted in a larger count than reliance on 250 alone. The third method was not expected to identify a meaningful number of additional persons.

Prevalence estimates, drawn from the 1987-94 NHIS, were applied to Medicare non-HMO person-months of enrollment to establish population denominators. Calculations were specific to three ethnic groupings, two genders, and three age groups (65-74, 75-84, 85+).

Computation of the benchmark denominator method followed methods described by Ray et al.[19] Records directly attributable to diabetes were 100% attributed to diabetes. For diabetic complications and unrelated conditions, the researcher calculated per-capita utilization and cost among the stratified diabetic and non-diabetic person-months of non-HMO enrollment. The differences were multiplied by the respective months of enrollment for the diabetic populations, and summed for total attributable hospital utilization or cost. Thus, *Attributed Utilization* was calculated as:

$$N^{+}_{a,g,e}\,[(U^{+}_{a,g,e,d}/N^{+}_{a,g,e}) - (U^{-}_{a,g,e,d}/N^{-}_{a,g,e})]$$

where

- $U^{+}_{a,g,e,d}$ was utilization or cost among persons with diabetes in a given age-gender-ethnic-diagnostic category,
- $U^{-}_{a,g,e,d}$ was utilization or cost within the comparable populations without diabetes,
- $N^{+}_{a,g,e}$ was the person-months of non-HMO enrollment for persons with diabetes in the age-gender-ethnic categories, and
- $N^{-}_{a,g,e}$ was the comparable person-months of enrollment for persons without diabetes.

The diagnostic categories were taken from Ray et al. and they include records directly attributable to diabetes, chronic complications of diabetes (neurological, cardiovascular-artery, cardiovascular-heart, cardiovascular-vein, renal, endocrine/metabolic, ophthalmic, and other), and a residual category of all other co-morbid conditions.[19] See Appendix B for details.

Epidemiologists will recognize this calculational formula as an algebraic variation of the formula for Attributable Risk Among the Exposed multiplied by total utilization or cost among persons with diabetes. Alternately, the formula may be viewed as Population Attributable Risk multiplied by total utilization or cost.

Using a uniform definition of persons with diabetes, the researcher applied to a single database each of the six methods for attributing hospital utilization and costs to diabetes. The researcher examined findings from the "clearly or probably attributable" and the "principal or secondary diagnosis" methods to determine if either approximated findings from the benchmark denominator method. If not, then one of the two methods was considered superior if it yielded estimates which were closer to those obtained from the benchmark method.

The researcher considered the problem of bias in application of national prevalence estimates to the Texas population. After evaluating for any temporal trend in prevalence in the NHIS data, the researcher adjusted the point estimates for utilization and cost to reflect linear projection of prevalence from the 1987-94 NHIS data to the mid-1995 study year. Also, as described in the section on findings, there was some likelihood that a large number of Mexican Americans were mis-classified as non-Hispanic Whites or Others in the Medicare enrollment files. Consequently, sensitivity testing considered the size and potential effects of that bias.

Prior studies provided some data on how the respective estimates would compare. Entmacher et al. found that costs using the "principal or secondary diagnosis" method were about 3.2-3.6 times greater than when using "principal diagnosis" alone.[24] The Carter Center found 3.6 times the cost.[25] A study of the National Hospital Discharge Survey found that the "principal or secondary diagnosis" method yielded about 3.8 times as many hospital records as the "principal diagnosis" method in 1980, but about 6.7 times in 1990.[51] The change likely stemmed from increased mention of diabetes among secondary diagnoses and from increased coding of complications as principal diagnoses. The Warner et al. "clearly or probably attributable" method, when applied to Medicare inpatient data, yielded 5.0 times the expenditures found by application of the "clearly attributable" method alone; and about 45% of "all costs for persons with diabetes" were "clearly or probably attributable" to diabetes.[18]

The "clearly attributable" method was expected to yield higher estimates than the "principal diagnosis" method. By way of checking the principal diagnoses listed as "clearly attributable", records of persons classified as not having diabetes were searched for presence of those principal diagnoses (or combinations of diagnoses and DRGs). If such records were present, then they indicated that the method failed to identify all persons with diagnosed diabetes. A check on diagnostic coding examined records for persons with diabetes that failed to note the condition when the principal diagnosis was “probably attributable” diabetes. Failure to note diabetes also suggested that some persons in the database classified as not having diabetes should appropriately have been defined as having diabetes. Similarly, records for diabetic persons having diagnoses that were not “clearly or probably attributable” were expected to omit diabetes as a diagnosis.

The researcher examined congruence of findings from the numerator methods. Records counted by the "principal diagnosis" method were a subset of those counted by the "clearly attributable" method. If the "principal or secondary diagnosis" method resulted in over-estimation with respect to the denominator method, then records counted by the "clear or probable attributable" method, if superior, would tend to be a subset of those counted by the "principal or secondary diagnosis" method; or the reverse if the "principal or secondary diagnosis" method resulted in under-estimation.

CHAPTER IV. FINDINGS

The 1995 Texas Medicare enrollment database had information on 2.19 million individuals, of which 1.83 million were ages 65 or older at the end of the prior year. Of those, 1.72 million had at least one month of Part A, non-HMO enrollment during 1995 with a combined total of almost 20 million months of non-HMO enrollment. They produced 553,556 hospital discharges during their 1995 non-HMO enrollment, which consumed 3.70 million days of stay and cost $3.82 billion, including amounts paid by Medicare and other insurers, deductibles and co-pays, but not including payments by Medicare Part B for other services received while hospitalized. Their average length of stay (ALOS) was 6.7 days, average cost per stay was $6,897, and average hospitalization cost per month of enrollment was $193. ALOS was longer among the minority enrollees and it tended to be longer among the older age groups. Average cost per stay was higher among minorities, and it tended to be higher among younger populations. Average cost per month of enrollment was higher among minorities, and it increased with age (see Table 2). Details can be found in Appendices C-F.

A. Medicare Enrollment among the Elderly

Some caution is warranted regarding the racial and ethnic categories in the Medicare data. We can immediately observe that the Hispanic population was

Table 2. Selected Data for Persons Ages 65 and Older at End of Prior Year Enrolled in Part A, Non-HMO Medicare, Texas, 1995

Ethnicity Gender Age	Enrolled Ages 65+	Enrollment Months	Hospital Stays	ALOS*	$/Stay	$/Month
Hispanic/Native Male						
65-74	19,770	228,192	5,767	7.2	8,032	203
75-84	5,526	62,926	2,431	7.5	7,347	284
85+	1,252	13,649	838	7.5	6,539	401
Hispanic/Native Female						
65-74	21,148	246,059	6,152	6.9	7,381	185
75-84	6,747	77,694	2,830	7.2	6,816	248
85+	1,764	19,912	1,001	7.5	6,180	311
Black Male						
65-74	35,605	402,111	9,847	7.5	7,923	194
75-84	16,631	185,197	7,128	7.5	7,113	274
85+	5,713	62,236	3,181	7.3	6,452	330
Black Female						
65-74	49,192	559,520	14,210	7.2	7,393	188
75-84	29,919	338,662	11,831	7.5	6,782	237
85+	13,563	150,680	6,922	7.4	6,234	286
White/Other Male						
65-74	384,966	4,437,789	96,164	6.4	8,028	174
75-84	185,023	2,102,319	74,949	6.7	7,023	250
85+	45,848	498,489	25,323	6.7	6,005	305
White/Other Female						
65-74	472,869	5,484,145	111,761	6.4	6,959	142
75-84	302,752	3,487,438	112,488	6.7	6,446	208
85+	125,917	1,398,912	60,733	6.7	5,698	247
Total	**1,724,205**	**19,755,930**	**553,556**	**6.7**	**6,897**	**193**

* Average length of stay in days

substantially under-represented among the enrolled population.

In total, about 1.83 million elderly Texans had any kind of Medicare enrollment during 1995, a figure which constituted about 96% of the elderly population as estimated by the Census Bureau (see Table 3).[52] However, according to the Medicare enrollment database, Hispanic enrollment was only

20.2% of the estimated elderly Hispanic population, compared to 95.2% for elderly African Americans and 109.8% for non-Hispanic Whites. Similarly, Native American coverage, at 11.2% of the estimated population, also was under-counted.

Clearly, large numbers of Hispanics and Native Americans were misclassified within the enrollment database. Certainly, some were classified as "Other" or "Unknown". However, those two categories had too few numbers to account for much of the discrepancy and, given the apparent over-representation of the non-Hispanic White population, it is clear that large numbers of elderly Hispanics/Native Americans were recorded as non-Hispanic Whites (see Appendix G for details). Thus, a simple re-classification of "Others" and "Unknowns" as Hispanic/Native American would not address the problem, as this would bring Hispanic coverage to only 36% of the estimated population, a figure much lower than the estimated 84% coverage for Mexican Americans nationally. By application of that national benchmark to the Texas Hispanic/Native American population, we can estimate that about 192,000 individuals were misclassified. And, given that African American coverage was comparable to the national benchmark, we can conclude that the missing individuals were classified into the non-Hispanic White and all other categories.

Table 3. All Medicare HMO and Non-HMO Enrollment Compared to Estimated Population, Texas, 1995

Ethnic Groups	Medicare Enrollment Ages 65+ *	Estimated Population Ages 65+ †	Percent Enrolled
All Categories			
White	1,554,944	1,416,735	109.8 %
Black	157,579	165,502	95.2 %
Asian	5,707	18,529	30.8 %
Hispanic	59,625	295,831	20.2 %
Native American	548	4,879	11.2 %
Other	29,052	---	---
Unknown	18,503	---	---
Total	**1,825,958**	**1,901,476**	**96.0 %**
As Grouped for Study			
Hispanic/Native American	60,173	300,710	20.0 %
Black	157,579	165,502	95.2 %
White/Asian/Other/Unknown	1,608,206	1,435,264	112.0 %
Total	**1,825,958**	**1,901,476**	**96.0 %**
An Alternative Grouping			
Hispanic/Native/Other/Unknown	107,728	300,710	35.8 %
Black	157,579	165,502	95.2 %
White/Asian	1,560,651	1,435,264	108.7 %
Total	**1,825,958**	**1,901,476**	**96.0 %**
U.S. Medicare Coverage, 1989 ‡			
White			95.4 %
Black			92.4 %
All Other Races			85.7 %
Mexican American (included above)			84.0 %
Total			**94.7 %**

* All persons enrolled in Medicare in Texas at any time during 1995 who were ages 65 or older at end of the prior year.

† Bureau of the Census, U.S. Dept. of Commerce. State population estimates by age, sex, race and Hispanic origin, 7/1/95.[52]

‡ Harris MI: Health insurance and diabetes. Chap. 29 in Diabetes in America, 2nd Edition. Harris MI, ed. National Institute of Diabetes and Digestive and Kidney Disease, 1995 (NIH pub. no. 95-1468).[48]

It is important to point out that the primary purpose of this study was to compare alternative approaches to estimating costs of diabetes, and not to compare costs across ethnic groups. Thus, the stratified analysis by ethnicity is not the key point of this study. However, misclassification of almost 200,000 Hispanics as non-Hispanic Whites/Others would result in application of the lower non-Hispanic White prevalence to the misclassified group. Consequently, attributable risk among the putative non-Hispanic White population would be over-estimated, as would overall costs attributed to diabetes.

B. Identifying Elderly Hospitalized Persons with Diabetes

The 1.72 million persons who were ages 65 and older at the end of the prior year and who were enrolled in Texas Part A, non-HMO Medicare during 1995 included 342,212 individuals who were discharged from short-stay, non-specialized hospitals (See Appendix H).

By the minimal definition of Diabetes Mellitus (ICD 250), 20.18% (69,060) of those individuals had diabetes among any of their diagnostic codes (see Table 4 and Appendix I). Using a one-tailed test, the 95% confidence interval for the upper boundary of that proportion was 20.29% (69,447). Allowance for Hypoglycemia (ICDs 251.0 or 251.2) among the criteria for identifying persons with diabetes resulted in a count of 69,509 persons with diabetes or 20.31% of the hospitalized population (see Appendix J). Thus, the researcher rejected the null hypothesis

Table 4. Comparing Methods for Identifying Persons with Diabetes Among Medicare Inpatients by Ethnicity, Gender and Age, Texas, 1995
Count of Persons with Diabetes, and
Percent of Hospitalized Persons within Groups during the Year

Ethnicity-Gender-Age	**Method I:** Number (%) of Persons with Any Diagnosis of Diabetes Mellitus (ICD 250) ...	**Method II:** Or with Any Diagnosis of Hypoglycemia w/Coma (251.0) or Hypoglycemia Unspecified (251.2) ...	**Method III:** Or with Any Diagnosis of Diabetic Retinopathy (362.0) or Poisoning by Insulins and Antidiabetic Agents (962.3)
Hispanic/Native Males			
65-74	1,283 (38.1%)	1,292 (38.4%)	1,292 (38.4%)
75-84	421 (29.5%)	426 (29.9%)	426 (29.9%)
85+	80 (16.8%)	81 (17.0%)	81 (17.0%)
Hispanic/Native Females			
65-74	1,762 (48.5%)	1,764 (48.6%)	1,764 (48.6%)
75-84	610 (37.1%)	612 (37.2%)	612 (37.2%)
85+	135 (22.8%)	138 (23.3%)	138 (23.3%)
Black Males			
65-74	1,594 (27.4%)	1,603 (27.5%)	1,603 (27.5%)
75-84	879 (21.4%)	897 (21.8%)	897 (21.8%)
85+	263 (14.5%)	271 (15.0%)	271 15.0(%)
Black Females			
65-74	3,445 (40.8%)	3,460 (41.0%)	3,461 (41.0%)
75-84	2,201 (31.7%)	2,221 (32.0%)	2,221 (32.0%)
85+	813 (19.7%)	824 (20.0%)	825 (20.0%)
White/Other Males			
65-74	12,636 (20.9%)	12,694 (21.0%)	12,694 (21.0%)
75-84	8,148 (18.0%)	8,183 (18.1%)	8,184 (18.1%)
85+	1,972 (12.8%)	1,999 (12.9%)	1,999 (12.9%)
White/Other Females			
65-74	15,405 (21.9%)	15,487 (22.0%)	15,488 (22.0%)
75-84	12,559 (20.3%)	12,639 (20.4%)	12,640 (20.4%)
85+	4,854 (10.5%)	4,918 (10.7%)	4,920 (10.7%)
Total	**69,060 (20.2%)**	**69,509 (20.3%)**	**69,516 (20.3%)**

(H1.1) as the evidence was that allowance for Hypoglycemia among the criteria diagnoses indeed produced a larger count of persons with diabetes.

Further allowance for Diabetic Retinopathy (ICD 362.0) or Poisoning by Insulins or Antidiabetic Agents (962.3) increased the count by only seven persons (see Appendix K). Thus, we cannot reject the null hypothesis (H1.2). While it is reasonable to expect that the two diagnoses would be useful in a study of outpatient services or care at surgical centers, the diagnoses were not further considered in this study to identify persons with diabetes in the hospitalization database. Thus, the researcher selected for persons with diabetes on the basis of presence of ICD codes for Diabetes Mellitus or Hypoglycemia in any position in any inpatient record for a given individual, and did not include Diabetic Retinopathy or Poisonings by Insulin or Diabetic Agents. This approach was consistent with methods employed by Ray et al.[19] and Warner et al.[17-18]

The reader should observe the various proportions of the respective hospitalized population groups identified as having diabetes. The proportions tended to be lower among the most elderly, no doubt reflecting early mortality among those with diabetes. And the proportions were very high among the Hispanic and African American populations. Almost half of Hispanic/Native women, ages 65-74 who were hospitalized in 1995, were identified as having diabetes. We cannot know how these figures might change if the suspected misclassification bias, discussed in the previous section, were corrected. Perhaps Hispanic individuals with diabetes were more likely to be correctly identified as Hispanic, or perhaps the proportions for the White/Other population were exaggerated by the inclusion of an unknown number of Hispanic persons with diabetes.

C. Estimated Diabetes Prevalence among Elderly Texans

Data from the National Health Interview Surveys (NHIS) for the years 1987 through 1994 were combined to calculate prevalence by ethnicity, gender and 10-year age groups for respondents ages 65 and older (see Table 5). Prevalence estimates for the respective groups varied substantially. Overall prevalence, unadjusted for national sampling representation of the respective demographic groups, was about 10% and prevalence for individual demographic groups, however small the samples, ranged from 6.4% to 25%. Prevalence figures shown in Table 5 for sub-total and total populations reflect the representation of the respective sub-populations in the total count of person-months of enrollment (see Table 6).

Confidence intervals for the respective demographic groups were based on simple binomial proportions. Variances were pooled to calculate confidence intervals for the combinations of ethnicity and gender, and for the overall population. The pooled variances were weighted according to person-months of non-HMO enrollment for each demographic group under Texas Medicare in 1995. Confidence intervals and relative confidence intervals were calculated accordingly.

Table 5. Texas Diabetes Prevalence by Ethnicity, Gender and Age Groups, Estimated from 1987-94 National Health Interview Surveys, Adjusted for One-Half of Incidence.

Subtotals and Totals Weighted for Person-Months of Enrollment

Ethnicity-Gender-Age	Sample Population	Persons With Diabetes	Base Prevalenc		95% Confidence Interval		Relative Confidence Interval	Incidence Adjustment	Adjusted Prevalence
Hispanic/Native Males									
65-74	176	28	15.91%	+/-	5.40%	+/-	33.97%	0.43%	16.34%
75-84	62	8	12.90%	+/-	8.34%	+/-	64.67%	0.23%	13.13%
85+	8	2	25.00%	+/-	30.01%	+/-	120.02%	0.23%	25.23%
Subtotal			15.70%	+/-	4.54%	+/-	28.90%	0.38%	16.08%
Hispanic/Native									
65-74	240	43	17.92%	+/-	4.85%	+/-	27.08%	0.43%	18.35%
75-84	106	13	12.26%	+/-	6.24%	+/-	50.92%	0.23%	12.49%
85+	26	2	7.69%	+/-	10.24%	+/-	133.16%	0.23%	7.92%
Subtotal			16.05%	+/-	3.72%	+/-	23.16%	0.37%	16.42%
Black Males									
65-74	495	71	14.34%	+/-	3.09%	+/-	21.53%	0.43%	14.77%
75-84	252	36	14.29%	+/-	4.32%	+/-	30.24%	0.23%	14.52%
85+	39	5	12.82%	+/-	10.49%	+/-	81.84%	0.23%	13.05%
Subtotal			14.18%	+/-	2.44%	+/-	17.20%	0.35%	14.53%
Black Females									
65-74	767	148	19.30%	+/-	2.79%	+/-	14.47%	0.43%	19.73%
75-84	397	75	18.89%	+/-	3.85%	+/-	20.38%	0.23%	19.12%
85+	105	15	14.29%	+/-	6.69%	+/-	46.85%	0.23%	14.52%
Subtotal			18.45%	+/-	2.13%	+/-	11.56%	0.33%	18.78%
White/Other Males									
65-74	4333	397	9.16%	+/-	0.86%	+/-	9.38%	0.43%	9.59%
75-84	2036	200	9.82%	+/-	1.29%	+/-	13.16%	0.23%	10.05%
85+	408	26	6.37%	+/-	2.37%	+/-	37.19%	0.23%	6.60%
Subtotal			9.16%	+/-	0.69%	+/-	7.49%	0.36%	9.52%
White/Other Females									
65-74	5496	495	9.01%	+/-	0.76%	+/-	8.40%	0.43%	9.44%
75-84	3169	281	8.87%	+/-	0.99%	+/-	11.16%	0.23%	9.10%
85+	912	62	6.80%	+/-	1.63%	+/-	24.03%	0.23%	7.03%
Subtotal			8.66%	+/-	0.56%	+/-	6.50%	0.34%	9.00%
Subtotal Males									
65-74			9.88%	+/-	0.82%	+/-	8.35%	0.43%	10.31%
75-84			10.26%	+/-	1.23%	+/-	11.95%	0.23%	10.49%
85+			7.51%	+/-	2.40%	+/-	31.97%	0.23%	7.74%
Subtotal			9.82%	+/-	0.66%	+/-	6.71%	0.36%	10.18%
Subtotal Females									
65-74			10.27%	+/-	0.73%	+/-	7.14%	0.43%	10.70%
75-84			9.80%	+/-	0.96%	+/-	9.77%	0.23%	10.03%
85+			7.53%	+/-	1.60%	+/-	21.20%	0.23%	7.76%
Subtotal			9.75%	+/-	0.55%	+/-	5.60%	0.34%	10.09%
Total									
65-74			10.09%	+/-	0.55%	+/-	5.43%	0.43%	10.52%
75-84			9.97%	+/-	0.75%	+/-	7.56%	0.23%	10.20%
85+			7.52%	+/-	1.33%	+/-	17.67%	0.23%	7.75%
Total			9.77%	+/-	0.42%	+/-	4.30%	0.35%	10.12%

Table 6. Diabetes Prevalence Estimates
Applied to Person-Months of Non-HMO Medicare Enrollment
By Ethnicity, Gender and Age at End of Prior Year, Texas, 1995

Ethnicity-Gender-Age	Total Months of Enrollment	Non-Diabetic Months	Diabetic Months		95% Confidence Interval *
Hispanic/Native Males					
65-74	228,192	190,908	37,284	+/-	12,664
75-84	62,926	54,662	8,264	+/-	5,345
85+	13,649	10,205	3,444	+/-	4,133
Subtotal	304,767	255,775	48,992	+/-	14,159
Hispanic/Native Females					
65-74	246,059	200,915	45,144	+/-	12,225
75-84	77,694	67,987	9,707	+/-	4,943
85+	19,912	18,335	1,577	+/-	2,101
Subtotal	343,665	287,237	56,428	+/-	13,069
Black Males					
65-74	402,111	342,705	59,406	+/-	12,789
75-84	185,197	158,314	26,883	+/-	8,130
85+	62,236	54,114	8,122	+/-	6,647
Subtotal	649,544	555,134	94,410	+/-	16,236
Black Females					
65-74	559,520	449,149	110,371	+/-	15,974
75-84	338,662	273,904	64,758	+/-	13,199
85+	150,680	128,808	21,872	+/-	10,248
Subtotal	1,048,862	851,861	197,001	+/-	22,769
White/Other Males					
65-74	4,437,789	4,012,105	425,684	+/-	39,910
75-84	2,102,319	1,890,969	211,350	+/-	27,816
85+	498,489	465,576	32,913	+/-	12,242
Subtotal	7,038,597	6,368,651	669,946	+/-	50,204
White/Other Females					
65-74	5,484,145	4,966,631	517,514	+/-	43,489
75-84	3,487,438	3,170,181	317,257	+/-	35,412
85+	1,398,912	1,300,593	98,319	+/-	23,627
Subtotal	10,370,495	9,437,404	933,091	+/-	60,665
Subtotal Males					
65-74	5,068,092	4,545,718	522,374	+/-	43,630
75-84	2,350,442	2,103,945	246,497	+/-	29,453
85+	574,374	529,895	44,479	+/-	14,220
Subtotal	7,992,908	7,179,559	813,349	+/-	54,545
Subtotal Females					
65-74	6,289,724	5,616,696	673,028	+/-	48,064
75-84	3,903,794	3,512,071	391,723	+/-	38,254
85+	1,569,504	1,447,735	121,769	+/-	25,810
Subtotal	11,763,022	10,576,502	1,186,520	+/-	66,423
Total					
65-74	11,357,816	10,162,414	1,195,402	+/-	64,904
75-84	6,254,236	5,616,017	638,219	+/-	48,273
85+	2,143,878	1,977,631	166,247	+/-	29,373
Total	19,755,930	17,756,061	1,999,869	+/-	85,947

* Confidence intervals for subtotals and totals reflect pooled variances weighted for months of enrollment.

Findings were adjusted to account for half of incidence as described by Kenny et al. (1995).[2] The adjustment required an increase of .43 percentage points for persons ages 65-74 and .23 percentage points for those ages 75 and older, and the confidence intervals were inflated proportionately.

The next step was to apply the data to person-months of non-HMO Medicare enrollment (see Table 6). The researcher assumed that persons with diabetes in a given demographic group were, on average, enrolled for the same number of months as persons without diabetes. Confidence intervals were calculated for individual demographic groups and were based on relative confidence intervals shown in Table 5. For aggregated groups, confidence intervals considered pooled variances weighted for months of enrollment. Detailed data for Tables 5 and 6 are available in Appendix L.

Diabetes prevalence, adjusted for half of incidence, was estimated at 10.12%. The reader can immediately observe that prevalence estimates for Hispanic male and female populations appear somewhat low and are accompanied by large relative confidence intervals (29% and 23% respectively). The effects of any under-statement of Hispanic prevalence would be compounded if Hispanics and Native Americans were indeed misclassified as non-Hispanic Whites and Others in the Medicare enrollment data. Thus, an alternative prevalence estimate considered a re-classification of non-Hispanic Whites/Others in the Medicare enrollment data as Hispanic.

To make the adjustment, the researcher first calculated Medicare coverage rates for African Americans in Texas by age and gender groups in relation to census estimates of the African American population in Texas for mid-1995.[52] The respective coverage rates were adjusted by the ratio of national Medicare coverage for Mexican Americans to national coverage for African Americans (84.0% / 92.4%) to estimate expected Hispanic coverage in Texas by age and gender groups. The resulting figures were applied to 1995 census estimates for the Texas Hispanic population to estimate the number of enrolled Hispanics by age and gender, and the number of months of coverage for each group was inflated in proportion to the increase from observed to expected Hispanic persons with Medicare coverage. The increases in enrollment and months of coverage for Hispanics were then deducted from the White/Other figures for each age and gender group.

The procedure produced estimates of 80.5% coverage for Mexican American males and 83.7% for females. Coverage for Whites/Others decreased to 91.7% for males and 92.9% for females. The count for Hispanic/Native non-HMO enrollment increased by 191,420 people, and person-months of Hispanic enrollment increased by 2.20 million months (see Table 7). Overall, the procedure changed the estimate of 2.00 million diabetic person-months of enrollment to 2.14 million, and overall estimated prevalence increased from 10.12% to 10.84%. As calculated, the confidence intervals increased proportionately.

Table 7. Medicare Non-HMO Enrollment and Person-Months of Enrollment Revised to Reclassify 191,420 Non-Hispanic Whites/Others as Hispanic/Native by Ethnicity, Gender and Age at End of Prior Year, Texas, 1995

Ethnicity-Gender-Age	Medicare Enrollment	Medicare Months	Revised Enrollment	Revised Months	Diabetic Months	95% Confidence Interval
Hispanic/Native Male						
65-74	19,770	228,192	65,697	758,298	123,899	+/- 42,084
75-84	5,526	62,926	27,592	314,198	41,264	+/- 26,686
85+	1,252	13,649	8,856	96,550	24,360	+/- 29,238
Hispanic/Native Female						
65-74	21,148	246,059	85,293	992,396	182,072	+/- 49,305
75-84	6,747	77,694	43,229	497,801	62,196	+/- 31,669
85+	1,764	19,912	16,959	191,430	15,166	+/- 20,194
Black Male						
65-74	35,605	402,111	35,605	402,111	59,406	+/- 12,789
75-84	16,631	185,197	16,631	185,197	26,883	+/- 8,130
85+	5,713	62,236	5,713	62,236	8,122	+/- 6,647
Black Female						
65-74	49,192	559,520	49,192	559,520	110,371	+/- 15,974
75-84	29,919	338,662	29,919	338,662	64,758	+/- 13,199
85+	13,563	150,680	13,563	150,680	21,872	+/- 10,248
White/Other Male						
65-74	384,966	4,437,789	339,039	3,907,683	374,834	+/- 35,143
75-84	185,023	2,102,319	162,957	1,851,047	186,089	+/- 24,491
85+	45,848	498,489	38,244	415,588	27,439	+/- 10,206
White/Other Female						
65-74	472,869	5,484,145	408,724	4,737,808	447,086	+/- 37,571
75-84	302,752	3,487,438	266,270	3,067,331	279,040	+/- 31,146
85+	125,917	1,398,912	110,7225	1,227,394	86,264	+/- 20,730
Total	1,724,205	19,755,930	1,724,205	19,755,930	2,141,120	+/- 92,017

Another consideration in evaluating prevalence estimates was the increase, over the years, in prevalence of diagnosed diabetes reported in the literature.[1] The researcher used NHIS survey data for the years 1987 through 1994 and applied findings to non-HMO Medicare enrollment for 1995. While findings from eight successive years of the NHIS would be appropriate for estimating prevalence as of 1/1/90, prevalence of diagnosed diabetes as of mid-1995 would likely be greater. Thus, the researcher evaluated the NHIS data to test for any increasing trend in prevalence. Logistic regression was employed with the dependent variable defined as the presence or absence of diabetes among the survey respondents. Independent variables were the year of the NHIS (1987 through 1994), gender of the respondent, three categorical ethnic groups, and age of the respondent. The independent and control variables were tested separately and jointly in various combinations to assure that findings would not vary according to the degree of control.

Age was significant as a predictor of presence of diabetes. When considered alone, there was a slight negative beta (-.009) and a 95% confidence interval ranging from -.016 to -.002. After controlling for age, Whites/Others were less likely than African Americans to report having diabetes (beta of -.368 with 95% CI of +/-.064). Similarly, Whites/Others were less likely than Mexican /Native Americans to report having diabetes (beta of -.309 with 95% CI of +/-.112). However, diabetes prevalence among African Americans did not significantly differ from prevalence among Mexican Americans (beta of .067 with 95% CI of +/-.124). Gender, after controlling for age and ethnicity, was not a significant predictor of diabetic status (beta of .010 for males and a 95% CI of +/-.049).

When the year of the NHIS was entered into the equation, the survey year was not a significant predictor of diabetic status. However, the beta of .017 and the 95% CI ranging from -.004 to +.038 is suggestive. The rules of hypothesis testing would conclude that the null hypotheses could not be rejected. However, the purpose of this exercise was not formal hypothesis testing, but rather to examine the appropriateness of re-evaluating diabetes prevalence estimated for 1987-1994 and applied to Texas in mid-1995. Any adjustment would be useful for testing the sensitivity of the prevalence estimate.

Thus, while diabetes prevalence for Texas, before including half of incidence, was estimated at 9.77% as of 1/1/1990, a straight-line projection to mid-1995 resulted in a prevalence estimate that was 7.74% higher. Consequently, the prevalence estimates, after including half of incidence, for individual groups were increased by 7.74% (times 1.0774) to achieve the appropriate correction, with the assumption that all groups were affected equally (see Table 8). This resulted in an estimate of 2.15 million diabetic person-months, and an estimated 10.90% diabetes prevalence after adjustment for half of incidence. The 95% confidence interval for the number of diabetic months of enrollment employed the relative confidence intervals presented earlier in Table 5. This means that the inflated months of diabetic enrollment were accompanied by proportionately larger confidence intervals, in this case, 92.5 thousand person-months.

Table 8. Non-Diabetic and Diabetic Months of Medicare Enrollment Adjusted to Account for Linear Trend in Prevalence from 1987-1994 NHIS to mid-1995, Texas

Each figure for Diabetic Months was increased by 7.74%

Ethnicity - Gender - Age	Non-Diabetic Months	Diabetic Months		95% Confidence Interval
Hispanic/Native Males				
65-74	188,022	40,170	+/-	13,644
75-84	54,022	8,904	+/-	5,758
85+	9,939	3,710	+/-	4,453
Subtotal	251,983	52,784	+/-	15,255
Hispanic/Native Females				
65-74	197,421	48,638	+/-	13,171
75-84	67,235	10,459	+/-	5,325
85+	18,212	1,700	+/-	2,263
Subtotal	282,869	60,796	+/-	14,080
Black Males				
65-74	338,107	64,004	+/-	13,779
75-84	156,234	28,963	+/-	8,760
85+	53,485	8,751	+/-	7,162
Subtotal	547,826	101,718	+/-	17,492
Black Females				
65-74	440,607	118,913	+/-	17,211
75-84	268,892	69,770	+/-	14,221
85+	127,115	23,565	+/-	11,041
Subtotal	836,613	212,249	+/-	24,531
White/Other Males				
65-74	3,979,158	458,631	+/-	42,999
75-84	1,874,611	227,708	+/-	29,969
85+	463,029	35,460	+/-	13,189
Subtotal	6,316,797	721,800	+/-	54,089
White/Other Females				
65-74	4,926,575	557,570	+/-	46,855
75-84	3,145,625	341,813	+/-	38,153
85+	1,292,983	105,929	+/-	25,456
Subtotal	9,365,183	1,005,312	+/-	65,360
Subtotal Males				
65-74	4,505,287	562,805	+/-	47,007
75-84	2,084,866	265,576	+/-	31,733
85+	526,453	47,921	+/-	15,321
Subtotal	7,116,606	876,302	+/-	58,767
Subtotal Females				
65-74	5,564,603	725,121	+/-	51,784
75-84	3,481,752	422,042	+/-	41,215
85+	1,438,310	131,194	+/-	27,807
Subtotal	10,484,666	1,278,356	+/-	71,565
Total				
65-74	10,069,890	1,287,926	+/-	69,928
75-84	5,566,618	687,618	+/-	52,010
85+	1,964,763	179,115	+/-	31,647
Total	17,601,271	2,154,659	+/-	92,599

Table 9. Non-Diabetic and Diabetic Months of Medicare Enrollment Adjusted to Simultaneously Re-Classify 2.2 Million White/Other Months as Hispanic/Native and to Account for Linear Trend in Prevalence

Ethnicity - Gender - Age	Non-Diabetic Months	Diabetic Months		95% Confidence Interval
Hispanic/Native Males				
65-74	624,809	133,489	+/-	45,342
75-84	269,740	44,458	+/-	28,752
85+	70,305	26,245	+/-	31,501
Subtotal	964,854	204,192	+/-	59,014
Hispanic/Native Females				
65-74	796,232	196,164	+/-	53,121
75-84	430,791	67,010	+/-	34,120
85+	175,091	16,339	+/-	21,757
Subtotal	1,402,114	279,513	+/-	64,735
Black Males				
65-74	338,107	64,004	+/-	13,779
75-84	156,234	28,963	+/-	8,760
85+	53,485	8,751	+/-	7,162
Subtotal	547,826	101,718	+/-	17,492
Black Females				
65-74	440,607	118,913	+/-	17,211
75-84	268,892	69,770	+/-	14,221
85+	127,115	23,565	+/-	11,041
Subtotal	836,613	212,249	+/-	24,531
White/Other Males				
65-74	3,503,836	403,847	+/-	37,863
75-84	1,650,555	200,492	+/-	26,387
85+	386,025	29,563	+/-	10,996
Subtotal	5,540,416	633,902	+/-	47,503
White/Other Females				
65-74	4,256,118	481,690	+/-	40,479
75-84	2,766,694	300,637	+/-	33,557
85+	1,134,453	92,941	+/-	22,335
Subtotal	8,157,264	875,269	+/-	56,906
Subtotal Males				
65-74	4,466,753	601,339	+/-	50,225
75-84	2,076,528	273,914	+/-	32,729
85+	509,815	64,559	+/-	20,640
Subtotal	7,053,096	939,812	+/-	63,026
Subtotal Females				
65-74	5,492,957	796,767	+/-	56,900
75-84	3,466,376	437,418	+/-	42,716
85+	1,436,658	132,846	+/-	28,157
Subtotal	10,395,991	1,367,031	+/-	76,529
Total				
65-74	9,959,710	1,398,106	+/-	75,910
75-84	5,542,904	711,332	+/-	53,803
85+	1,946,473	197,405	+/-	34,878
Total	17,449,087	2,306,843	+/-	99,140

An additional set of estimates combined the two approaches, that is, after adjustment for misclassification of the Hispanic population, the figures for diabetic months were inflated by 7.74% to account for any linear trend in diabetes prevalence. The procedure resulted in an estimate of 2.31 million diabetic person-months and an estimated diabetes prevalence of 11.68% among the elderly enrolled population (see Table 9). Confidence intervals were adjusted proportionately.

Thus, we have four alternative estimates of diabetes prevalence among Medicare enrollees and, consequently, four estimates of the number of diabetic person-months of non-HMO Medicare enrollment in Texas. The most direct estimate was derived from the National Health Interview Surveys for 1987-94 and applied to 1995 Texas Medicare enrollment across demographic strata with adjustment for half of incident diabetes cases. An alternative estimate reflected re-classification of 191,420 persons, and their person-months of non-HMO Medicare enrollment, shown in the enrollment database as non-Hispanic Whites/Others to the Hispanic/Native category. Additional adjustment considered a linear trend in prevalence of diagnosed diabetes between the 1987-94 NHIS and the 1995 study year. Finally, the researcher constructed an estimate based on the combined effects of the ethnic re-classification and the estimated linear trend in prevalence (see Table 10).

Table 10. Alternative Estimates of Diabetes Prevalence and Person-Months of Diabetic Non-HMO Medicare Enrollment, Texas, 1995

Estimator	Prevalence + 1/2 Incidence	95% C.I. *	Non-Diabetic Months	Diabetic Months	95% C.I. *
Basic Estimate	10.12%	+/- 0.44%	17,756,061	1,999,869	+/- 85,947
Ethnic Re-Classification	10.84%	+/- 0.47%	17,614,810	2,141,120	+/- 92,017
Linear Trend	10.91%	+/- 0.47%	17,601,271	2,154,659	+/- 92,599
Re-Classification Plus Linear Trend	11.67%	+/- 0.50%	17,449,087	2,306,843	+/- 99,140
Risk Survey (1994-96) †	12.57%	+/- 2.86%	17,272,610	2,483,320	+/- 565,336

* 95% confidence interval.
† Texas Behavioral Risk Factor Survey, 1994-96.[53]

The four prevalence estimates were compared with data from the Texas Behavioral Risk Factor Survey for the years 1994-96. That survey placed diabetes prevalence at 12.57% of the elderly population with a very broad 95% confidence interval of +/- 2.86%.[53] Each of the four point estimates derived from the NHIS were lower than the point estimate from the Behavioral Risk Factor Survey, but were within the associated confidence interval.

D. Estimates from the Denominator Method

The denominator method for attributing utilization and costs to diabetes subtracted average cost (or utilization) per non-diabetic month of enrollment from the average per diabetic month, then multiplied by months of enrollment among persons with diabetes. Four estimators were employed. The basic estimate applied prevalence estimates for the elderly from the 1987-1994 National Health Interview Surveys to months of non-HMO Medicare enrollment in Texas in 1995. This basic approach included an adjustment for half of incident cases. A second approach accounted for an apparent misclassification in Medicare enrollment figures whereby Hispanics were substantially under-counted and grouped with Whites/Others. A third approach adjusted the basic estimate to account for a suspected linear trend in diabetes prevalence over time, and a fourth approach combined the effects of the adjustment for ethnic misclassification with the adjustment for trend in prevalence. The resulting prevalence estimates were compared to elderly prevalence findings from the 1994-96 Texas Behavioral Risk Factor Survey.

Table 11 provides details for attributed utilization and costs by types of complications using the basic method of estimation. The groups of diabetic complications were taken from the ADA-sponsored study for 1992 and calculations followed methods established by that study.[19] The reader should immediately observe that costs "directly attributable to diabetes" were small in comparison to total attributed costs. Indeed, the great majority of attributed costs were not directly attributable to diabetes or to the general groups of complications of diabetes, but rather to the residual category of "unrelated conditions". From this finding, we can observe that groupings of complications generally were not useful in isolating costs of diabetes. The great majority of diabetic costs were not isolated by types of

Table 11. Point Estimates and 95% Confidence Intervals for Hospital Stays, Days of Stay and Costs Attributable to Diabetes by Types of Complications Using Basic Estimate for Person-Months of Elderly Non-HMO Medicare Enrollment, Texas, 1995

	Lower Bound	Point Estimate	Upper Bound
HOSPITAL STAYS			
Directly Attributable	4,272	4,272	4,272
Neurological Complications	4,134	4,234	4,333
Cardiovascular-Artery Complications	1,022	1,066	1,109
Cardiovascular-Heart Complications	13,870	14,152	14,431
Cardiovascular-Vein Complications	271	289	307
Renal Complications	3,432	3,499	3,564
Endocrine/Metabolic Complications	149	150	152
Ophthalmic Complications	41	42	43
Other Complications	229	238	247
Unrelated Conditions	54,795	56,555	58,297
Total	82,214	84,496	86,755
DAYS OF STAY			
Directly Attributable	20,864	20,864	20,864
Neurological Complications	26,150	26,718	27,282
Cardiovascular-Artery Complications	7,008	7,297	7,583
Cardiovascular-Heart Complications	77,953	79,354	80,742
Cardiovascular-Vein Complications	1,959	2,076	2,192
Renal Complications	21,893	22,275	22,654
Endocrine/Metabolic Complications	702	712	721
Ophthalmic Complications	179	182	184
Other Complications	1,048	1,084	1,119
Unrelated Conditions	449,124	461,271	473,301
Total	606,881	621,834	636,643
COSTS			
Directly Attributable	14,462,560	14,462,560	14,462,560
Neurological Complications	20,766,190	21,240,554	21,710,348
Cardiovascular-Artery Complications	4,947,748	5,292,036	5,633,006
Cardiovascular-Heart Complications	66,931,960	68,199,725	69,455,277
Cardiovascular-Vein Complications	1,084,509	1,152,331	1,219,499
Renal Complications	16,825,376	17,109,185	17,390,261
Endocrine/Metabolic Complications	610,400	617,433	624,399
Ophthalmic Complications	122,656	125,621	128,557
Other Complications	843,579	872,437	901,016
Unrelated Conditions	450,165,015	463,375,600	476,458,910
Total	576,759,993	592,447,481	607,983,833

complications. Among the groups of complications, the most costly were Heart Disease, Neurological Complications, and Renal Complications; and the least costly groups were Ophthalmic and Endocrine/Metabolic Complications (Details are available in Appendix M).

Table 12. Alternative Point Estimates and 95% Confidence Intervals for Hospital Stays, Days of Stay and Costs Attributable to Diabetes Among Elderly Non-HMO Medicare Enrollees, Texas, 1995

	Lower Bound	Point Estimate	Upper Bound
HOSPITAL STAYS			
Basic Estimate	82,214	84,496	86,755
Ethnic Re-Classification	78,251	80,734	83,191
Prevalence Trend	77,868	80,371	82,847
Trend and Re-Classification	73,516	76,244	78,940
1994-96 Behavioral Risk Survey	55,051	71,367	86,649
DAYS OF STAY			
Basic Estimate	606,881	621,834	636,643
Ethnic Re-Classification	580,908	597,182	613,286
Prevalence Trend	578,396	594,798	611,028
Trend and Re-Classification	549,874	567,750	585,424
1994-96 Behavioral Risk Survey	428,850	535,787	635,946
COSTS			
Basic Estimate	576,759,993	592,447,481	607,983,833
Ethnic Re-Classification	549,512,151	566,584,670	583,479,746
Prevalence Trend	546,876,392	564,083,945	581,111,390
Trend and Re-Classification	516,953,719	535,707,333	554,249,047
1994-96 Behavioral Risk Survey	389,985,426	502,174,773	607,252,913

Table 12 presents findings from each of the alternative approaches to estimating utilization and costs attributable to diabetes (Details are available in

Appendices M-P). The confidence intervals employed pooled variance calculations rather than simply summing across demographic groups, and relied on the relative confidence intervals previously shown in Table 5. In contrast to the basic estimates, the three alternative estimates each used a larger figure for months of diabetic enrollment and a lower figure for months of non-diabetic enrollment. The result is that the alternative estimates each resulted in lower estimates of utilization and cost attributable to diabetes.

For comparison, figures are provided for number stays, hospital days and costs as calculated from prevalence estimates taken from the 1994-96 Texas Behavioral Risk Factor Survey. That survey's very wide confidence interval for prevalence results in a wide range of possibilities for estimates of hospital stays, days of stay and costs.

Table 13 presents details for cost estimates by demographic groups for each of the four approaches to estimation. Confidence intervals were not shown in this table. The negative costs among Hispanic Males ages 85 and older suggest that the methods employed for ethnic re-classification did not successfully address the problem. One of the issues was that re-classification of months of enrollment did not account for the misclassification of costs between ethnic groups. The logical conclusion of this observation is that any efforts to interpret findings with respect to ethnic groups in Texas are highly suspect.

Table 13. Point Estimates for Costs Attributable to Diabetes Using Alternative Estimators by Ethnicity, Gender and Age at End of Prior Year Among Elderly Non-HMO Medicare Enrollees, Texas, 1995

Subtotals and totals are weighted for representation of respective groups within NHIS survey data.

	Age	Basic Estimate	Ethnic Reclassification	Prevalence Trend	Combined Adjustment
Hispanic Males	65-74	14,868,594	14,868,594	14,385,893	14,385,893
	75-84	4,830,386	4,830,386	4,676,098	4,676,098
	85+	-268,882	-268,882	-423,053	-423,053
	Subtotal	19,699,215	19,617,879	18,947,383	18,657,080
Hispanic Females	65-74	21,672,234	21,672,234	21,252,103	21,252,103
	75-84	6,761,694	6,761,694	6,621,707	6,621,707
	85+	1,522,270	1,522,270	1,491,004	1,491,004
	Subtotal	29,441,030	29,927,176	28,801,129	29,340,607
Black Males	65-74	15,209,604	15,209,604	14,355,438	14,355,438
	75-84	6,253,508	6,253,508	5,661,570	5,661,570
	85+	874,421	874,421	643,463	643,463
	Subtotal	22,161,617	22,161,617	20,466,490	20,466,490
Black Females	65-74	33,464,724	33,464,724	32,076,580	32,076,580
	75-84	16,515,860	16,515,860	15,327,998	15,327,998
	85+	4,484,531	4,484,531	3,969,599	3,969,599
	Subtotal	53,532,043	53,532,043	50,344,024	50,344,024
White/Other Males	65-74	121,818,360	121,818,360	116,434,529	116,487,085
	75-84	61,359,423	61,359,423	57,301,356	57,359,641
	85+	14,607,144	14,607,144	13,850,839	13,870,918
	Subtotal	196,637,167	196,484,490	188,344,354	186,303,668
White/Other Females	65-74	147,078,444	147,078,444	141,950,625	141,950,625
	75-84	97,454,967	97,454,967	92,555,189	92,555,189
	85+	28,489,242	28,489,242	26,620,183	26,620,183
	Subtotal	269,879,858	269,940,778	257,702,604	257,769,254
Total	Hispanic	49,140,245	49,545,055	47,748,512	47,997,687
	Black	75,693,660	75,693,660	70,105,514	70,105,514
	White/Other	466,517,025	466,425,268	446,046,958	444,072,922
	Total	592,447,481	566,584,670	564,083,945	535,707,333

E. Comparison with Estimates from Numerator Methods

As previously described, five numerator methods were available for attributing utilization and costs to diabetes. Two methods were available to establish minimum bounds. The simpler of these selected for hospital stays having a principal diagnosis of diabetes, and the more complicated approach, drawn from Warner and colleagues,[17-18] selected on various combinations of diagnoses from hospital stays among persons known to have diabetes. Two numerator methods were available for intermediate estimates of diabetes costs. The simpler approach selected for any record having a diagnosis of diabetes, whether listed as a principal or secondary diagnosis on the record, and the more complicated approach, also drawn from Warner and colleagues, selected all records of persons known to have diabetes and then searched among those records for various combinations of principal and secondary diagnoses or DRGs. The most inclusive numerator method selected all records of persons with diabetes regardless of the diagnoses listed on the individual records. Table 14 compares findings from the five numerator methods (See Appendix Q for details).

The first two methods, those establishing lower bounds for the cost estimates, produced almost identical results. Thus, the more complicated method of looking for records “Clearly Attributable to Diabetes” offered no clear advantage in comparison to the simpler approach of looking for records having diabetes as “Principal Diagnosis”.

Table 14. Hospital Stays, Days of Stay and Costs According to Five Numerator Methods for Attributing Care to Diabetes Among Elderly Non-HMO Medicare Recipients, Texas, 1995

	Hospital Stays			Days of Stay			Costs		
Attribution Method	Attributed		95% C.I.	Attributed		95% C.I.	Attributed		95% C.I.
Principal Diagnosis	8,875	+/-	183	60,857	+/-	1,198	53,260,032	+/-	1,002,954
Clearly Attributable	8,891	+/-	183	61,039	+/-	1,201	53,416,319	+/-	1,003,857
Clearly or Probably Attributable	59,258	+/-	451	381,441	+/-	2,887	402,695,065	+/-	3,915,174
Principal or Secondary Diagnosis	112,345	+/-	587	780,609	+/-	4,191	773,436,171	+/-	4,956,701
All Care for Persons With Diabetes	131,978	+/-	621	933,036	+/-	4,735	918,934,538	+/-	5,559,974

Hypothesis 2.1 asked whether the numerator method which searched for diabetes in any position in the medical record (Principal or Secondary Diagnosis) produced estimates which approximated those resulting from a benchmark denominator method. Comparisons of figures from the "Principal or Secondary Diagnosis" method in Table 14 with alternative estimates presented earlier in Table 12 indicate that the figures from the "Principal or Secondary Diagnosis" method were uniformly greater than the upper boundaries of the confidence intervals calculated from the respective denominator methods. Such was the case even when comparison was made with estimates resulting from application of prevalence data from the Texas Behavioral Risk Factor Survey which had a very broad confidence interval. Thus, we cannot accept that the "Principal or Secondary

Diagnosis" method yielded estimates equal to those from the denominator method.

Hypothesis 2.2 asked whether findings from the "Clearly or Probably Attributable" method approximated findings from the denominator method. In this comparison, the conclusions were not as clear-cut. When findings from the "Clearly or Probably Attributable" method were compared with findings from the alternative estimates based on prevalence data from the National Health Interview Survey, the numerator method produced results which were uniformly below the lower bounds for the confidence intervals associated with the alternative denominator calculations. However, when comparison was made with findings based on prevalence data from the Texas Behavioral Risk Factor Survey, then point estimates for number of hospital stays and costs from the "Clearly or Probably Attributable" method were within the lower range of the respective confidence intervals. The estimate for days of stay attributable to diabetes, however, was significantly lower. On balance, any conclusion would depend on which denominator method is to accepted as the most accurate benchmark.

An alternative approach to looking at the problem was to ask "If the cost findings from the numerator methods were accepted as accurate, then what would be the implications for diabetes prevalence among elderly Medicare beneficiaries in Texas?" Table 15 presents calculations of the implications for diabetes prevalence on the basis of utilization and cost estimates resulting from application of the "Principal or Secondary Diagnosis" and the "Clearly or Probably Attributable" methods for attributing utilization and costs to diabetes. Depending on whether calculations were based on hospital stays, days of stay or costs, findings from the "Principal or Secondary Diagnosis" method resulted in prevalence estimates ranging from 4.45% to 5.23%. Findings from the "Clearly or Probably Attributable" method ranged from 14.71% to 16.64%. For comparison, the table presents alternative benchmarks. Alternative calculations based on the National Health Interview Survey resulted in prevalence estimates which ranged from 9.68% to

Table 15. Estimates of Diabetes Prevalence Among Elderly Non-HMO Medicare Beneficiaries Based on Point Estimates for Hospital Stays, Days and Costs Calculated from Two Numerator Methods for Attributing Care to Diabetes; Comparison with Findings from National and State Surveys; Texas, 1995

	Hospital Stays	Days of Stay	Costs
All care for:			
Persons with Diabetes	131,978	933,036	918,934,538
Persons without Diabetes	421,578	2,763,045	2,898,752,024
Point Estimate from:			
Principal or Secondary Diagnosis Method	112,345	780,609	773,436,171
Clearly or Probably Attributable Method	59,258	381,441	402,695,065
Prevalence Implications of:			
Principal or Secondary Diagnosis Method	4.45%	5.23%	4.78%
Clearly or Probably Attributable Method	14.71%	16.64%	15.12%
Prevalence Calculated from NHIS Data:			
Lower Bounds of 95% Confidence Intervals		9.68% - 11.17%	
Point Estimates		10.12% - 11.67%	
Higher Bounds of 95% Confidence Intervals		10.52% - 12.17%	
Prevalence from Risk Factor Survey Data:			
Lower Bound of 95% Confidence Interval		9.71%	
Point Estimate		12.57%	
Upper Bound of 95% Confidence Interval		15.43%	

12.17%. The 95% confidence interval for elderly diabetes prevalence based on the Texas Behavioral Risk Factor Survey ranged from 9.71% to 15.43%.

Thus, we can quickly conclude that the "Principal or Secondary Diagnosis" method for attributing utilization and costs to diabetes produced very improbable estimates of diabetes prevalence. The estimates were far too low and, consequently, we can conclude that the method greatly over-estimated attributable utilization and costs. The prevalence estimates from the "Clearly or Probably Attributable" method were higher than those calculated from the National Health Interview Survey, and, while they were also high in relation to the point estimate from the Behavioral Risk Factor Survey, they were not uniformly higher than described by the upper boundary of the 95% confidence interval. We can reasonably conclude that the "Clearly or Probably Attributable" method resulted in prevalence estimates which were somewhat high and, consequently, that the utilization and cost estimates were on the low side.

Hypothesis 2.3 asked whether the "Clearly or Probably Attributable" method yielded results which were closer to the benchmark denominator findings than were results from the "Principal or Secondary Diagnosis" method. While neither method yielded results which were fully satisfactory, we can safely conclude that the "Clearly or Probably Attributable" method better approximated the benchmark findings. The reader can verify this conclusion by reviewing tables 12 and 14. The basic benchmark cost estimate was about equidistant from the estimates produced by the two numerator methods. With each adjustment to the benchmark to account for ethnic misclassification and linear trend in prevalence, the benchmark cost figure came closer to the estimate from the "Clearly or Probably" method. However, even under the minimal cost estimate calculated from the Behavioral Risk Factor Survey data on prevalence, the estimate from the "Clearly or Probably" method was still $100 million shy of the benchmark.

Table 16 looks at findings from the "Clearly or Probably Attributable" method in comparison to findings from the benchmark "Attributable Risk" method by types of complications. In this case, the "Attributable Risk" method was based on prevalence data from the National Health Interview Survey with adjustments for misclassification of Hispanics as White/Others within the Medicare enrollment database, and for a linear trend in diabetes prevalence. The two approaches used similar, but not identical, groupings of complications, even though the diagnostic criteria differed for each type of complications (see Appendices A and B).

We can immediately observe that almost all of the stays and costs identified as "Clearly Attributable to Diabetes" had diabetes as the principal diagnosis. Only a handful of stays were due to complications which were "Clearly Attributable to Diabetes". In comparison, the corresponding count of stays and costs under the "Attributable Risk" method found less that half of the stays and only about one-fourth of the costs found by the "Clearly Attributable" method. This peculiarity resulted from the criterion under the "Attributable Risk" method by which hospital

Table 16. Comparison of Findings from Clearly or Probably Attributable Method and Attributable Risk Method by Types of Complications, Texas, 1995

	Clearly or Probably Attributable			Attributable Risk Method *		
	Stays	Days	Costs	Stays	Days	Costs
Clearly Attributable						
Diabetes	8,875	60,857	53,260,032	4,272	20,864	14,462,560
Neurological Complications	0	0	0	n.a.	n.a.	n.a.
Cardiovascular- Artery	16	182	156,287	n.a.	n.a.	n.a.
Renal Complications	0	0	0	n.a.	n.a.	n.a.
Ophthalmic Complications	0	0	0	n.a.	n.a.	n.a.
Other Complications	0	0	0	n.a.	n.a.	n.a.
Total Clearly Attributable H	**8,891**	**61,039**	**53,416,319**	**4,272**	**20,864**	**14,462,560**
Probably Attributable						
Neurological Complications	8,453	53,620	50,611,348	3,872	24,662	19,524,825
Cardiovascular - Artery	6,462	49,347	52,575,555	907	6,252	4,046,780
Cardiovascular - Heart	30,271	186,917	222,363,739	13,132	74,287	63,614,339
Cardiovascular - Vein	n.a.	n.a.	n.a.	223	1,653	907,027
Renal	4,302	26,193	19,676,797	3,259	20,892	16,082,673
Endocrine/Metabolic	238	1,210	1,279,869	144	677	591,995
Ophthalmic	30	90	88,258	39	172	114,897
Other Complications	611	3,025	2,683,180	204	954	768,061
Total Probably Attributable I	**50,367**	**320,402**	**349,278,746**	**21,781**	**129,549**	**105,650,595**
Other Comorbid Conditions	n.a.	n.a.	n.a.	**50,191**	**417,336**	**415,594,177**
Total	**59,258**	**381,441**	**402,695,065**	**76,244**	**567,750**	**535,707,333**

* Attributable risk method based on prevalence estimate from National Health Interview Surveys with adjustments for misclassification of Hispanics as Whites/Others within the Medicare enrollment files and for linear trend in prevalence.

† Attributable risk method describes this category as "Directly Attributable to Diabetes".

‡ Attributable risk method describes these categories as "Attributable to Chronic Complications of Diabetes".

n.a. Category not applicable to method.

stays having a diagnosis of diabetes or hypoglycemia were also required to have a diabetes-related DRG (see Appendix B). It would appear that the missing records did not meet that secondary criterion and, consequently, those stays and costs were pushed into the attributable risk calculations for "Complications" or "Other Comorbid Conditions". This finding points to a need to revise the criteria employed by the "Attributable Risk" method.

The attributable risk calculations for the respective chronic complications of diabetes contained a similar conservative bias. For example, the calculations for attributable risk of Heart Disease required that, for persons known to have diabetes, when the principal diagnosis was among the specified heart disease diagnoses, only those cases also having a secondary diagnosis of Diabetes Mellitus (ICD 250) or Hypoglycemia (ICDs 251.0 or 251.2) were considered. Thus, when a person was known to have diabetes and was hospitalized for Congestive Heart Disease (ICD 428), but there was no mention of diabetes in the medical record, then that record was not included in the attributable risk calculation for cardiovascular complications. Instead, the record was considered within the category of all "Other Comorbid Conditions".

Consequently, we cannot view the cost estimates for the chronic complications as the products of true attributable risk calculations, because not all of the exposed persons having the complications of interest were included in the calculations. To the extent that medical records of persons with diabetes failed to mention diabetes or failed to contain the appropriate DRG, the "Attributable Risk" estimates for chronic complications under-estimated utilization and costs attributable to those complications.

The overall method was sufficiently robust to overcome the bias because the missing records were eventually employed in the calculation for attributable risk for all "Other Comorbid Conditions" and the figures for that category were over-estimated to balance for the under-estimates in the chronic disease categories.

F. Data Quality Checks

The methods employed by Warner and colleagues[17-18] introduced a new numerator approach to attributing utilization and costs to diabetes. The method first identified persons with diabetes within a database, then selected all of their records and sorted those records for certain principal diagnoses or combinations of diagnoses and DRGs which could be "clearly" or "probably" attributed to diabetes. As we have seen, the "Clearly Attributable" method yielded findings which were little different from those resulting from the more traditional "Principal Diagnosis" method, which simply selected for records with diabetes as the first-listed diagnosis.

Findings from the "Clearly or Probably Attributable" method, on the other hand, differed substantially from those of the more traditional "Principal or Secondary Diagnosis" method. Neither method fully approximated findings from the alternative benchmark denominator approaches. However, where the "Principal or Secondary Diagnosis" method substantially over-estimated utilization and cost, the "Clearly or Probably Attributable" method resulted in under-estimates. This means that the list of principal diagnoses identified by Warner and colleagues as "probably attributable" was too conservative and, with allowance for more types of questionable diagnoses, the method could be modified to yield more accurate findings. This is not to say that any particular case using that method would be correctly attributed to diabetes or to other causes. Rather it is to say that the goal of the method would be to yield a balance of false-positives and false-negatives, with the cumulative effect being accurate estimation of overall utilization and cost which can be attributed to diabetes.

Hypothesis 2.4 asked whether those cases defined as "Clearly Attributable to Diabetes" were exclusive to persons with diabetes. Thus, the researcher searched the database for instances where hospital stays, which were defined as "Clearly Attributable to Diabetes", were for individuals having no record of diabetes. A total of 8,895 hospital stays were defined as "Clearly Attributable". Of these, only four were for individuals having no record in the database which mentioned diabetes. While there should have been no hospital stays meeting that criterion, the fact the only four such stays were identified suggests that there is little of this kind of error.

In reviewing the selection criteria (see Appendix A), we note that most principal diagnoses listed as "Clearly Attributable" also required a secondary diagnosis of diabetes, and only four possible principal diagnoses could result in the error described:

362.0 Diabetic retinopathy;
364.4 Vascular disorders of iris and ciliary body;
648.0 Diabetes mellitus complicating pregnancy
(excluding gestational diabetes); and
790.2 Abnormal glucose tolerance test
(excluding that complicating pregnancy).

Some review of these diagnoses would be useful to determine whether the record was in error and should have included a diagnosis of diabetes, or if there was some possibility that any of the diagnoses might be made in the absence of diabetes.

Hypothesis 2.5 asked whether all records for persons with diabetes having principal diagnoses which were "Probably Attributable to Diabetes" indeed noted the presence of diabetes. Of 50,367 records for hospital stays by persons with diabetes which were defined as "Probably Attributable to Diabetes", 7,043 had no mention of diabetes. This does not necessarily mean that the records were in error, as many of the records could be for conditions not specific to diabetes and the medical care staff did not believe that diabetes was a factor in the hospitalization. However, the number is simply too large to ignore. It is more likely that this finding highlights problems within the medical care system in recognizing diabetes and its role in the many non-specific complications of the disease. Further, we might ask whether such failure to note diabetes in medical records caused serious error in the benchmark denominator calculations. If such were the case, then the benchmark calculations under-estimated the costs of diabetes.

Hypothesis 2.6 asked the opposite question of whether or not records for hospital stays judged as not "Clearly or Probably Attributable" to diabetes, even though the stay was for a person known to have diabetes, included or omitted mention of diabetes. Of 72,720 stays which met those criteria, a total of 60,130 mentioned diabetes and 12,590 did not. Again, we cannot conclude that any of the records were in error. Instead, we might offer this finding as evidence that the medical care system is doing a reasonable job at identifying persons with diabetes within its care, even when it is not clear that the hospitalization was a consequence of the disease. On the other hand, because the "Clearly or Probably" method for attributing care to diabetes likely under-estimated utilization and costs, we can assume that revision of the criteria would include many of the 60,130 hospital stays as attributable to diabetes.

Finally, the researcher looked at congruence of findings, first, between the two methods for estimating the lower bounds of attributable utilization and, second, between the two intermediate numerator methods. The "Principal Diagnosis" method and the "Clearly Attributable" method yielded very similar findings. All but 16 records were in agreement. The 16 cases were overlooked by the "Principal Diagnosis" method, but were selected by the "Clearly Attributable" method (see Table 17).

Table 17. Congruence of Findings Comparing the Principal Diagnosis Method and the Clearly Attributable Method for Attributing Hospital Stays Among Elderly Non-HMO Medicare Beneficiaries to Diabetes, Texas, 1995

	Principal Diagnosis Method		
Clearly Attributable Method	Attributed	Not Attributed	Total
Attributed	8,875	16	8,891
Not Attributed	0	544,665	544,665
Total	8,875	544,681	553,556

The "Principal or Secondary Diagnosis" method and the "Clearly or Probably Attributable" method, on the other hand, did not agree on more than 12% of the hospital stays in question (see Table 18). Of these, the great majority were selected by the "Principal or Secondary diagnosis" method, but were rejected by the "Clearly or Probably Attributable" method. This finding is in agreement with the earlier observation that the "Principal or Secondary Diagnosis" method greatly over-estimated utilization and costs, and that the "Clearly or Probably Attributable" method probably under-estimated utilization and costs. Indeed, the "Clearly or

Table 18. Congruence of Findings Comparing the Principal-Secondary Diagnosis Method and the Clearly-Probably Attributable Method for Attributing Hospital Stays among Elderly Non-HMO Medicare Beneficiaries to Diabetes, Texas, 1995

	Principal or Secondary Diagnosis		
Clearly or Probably Attributable	Attributed	Not Attributed	Total
Attributed	52,215	7,043	59,258
Not Attributed	60,130	434,168	494,298
Total	112,345	441,211	553,556

Probably Attributable" method generally selected hospital stays which were a subset of those selected by the "Principal or Secondary Diagnosis" method, and, given that the "Principal or Secondary" method over-estimated utilization and costs, this would suggest that the "Clearly or Probably Attributable" method is superior. Depending on which approach to calculating the benchmark denominator is viewed as most accurate, about 12,000 to 25,000 of the 60,130 stays selected by the "Principal or Secondary Diagnosis" method and rejected by the "Clearly or Probably Attributable" method were stays which might be classified as attributable to diabetes if the "Clearly or Probably" method were revised and expanded.

CHAPTER V. CONCLUSIONS

A. Summary of Findings

The researcher compared three sets of criteria, drawn from the literature, for identifying elderly persons with diabetes within the 1995 non-HMO Medicare inpatient billing database for Texas. The oldest approach, historically, was to simply select persons having any diagnosis of Diabetes Mellitus (ICD 250). A more recent approach, employed in studies sponsored by the American Diabetes Association[19,21,31] and, more recently, in study of costs of diabetes in Texas,[17-18] also included persons having a diagnosis of Hypoglycemia (ICDs 251.0 or 251.2). Although the more inclusive approach added only .65% to the total number of individuals counted, the researcher concluded that it indeed selected a significantly larger number of persons. A third approach, which also allowed for persons with Diabetic Retinopathy (362.0) or Poisoning by Insulins or Antidiabetic Agents (962.3) added an insignificant number of individuals. While the latter diagnoses might be relevant for study of outpatient care or ambulatory surgery, in this study of inpatient costs, the researcher viewed persons having any medical record with ICDs 250, 251.0 or 251.2 as persons with diabetes.

The researcher considered five numerator methods for sorting inpatient records for attribution to diabetes. Two methods, called "Principal Diagnosis" and "Clearly Attributable", respectively, were viewed as estimators to establish a minimum number of hospital stays and associated patient days and costs for attribution to diabetes. A third estimator, "All Care for Persons with Diabetes", established a maximum. The two intermediate estimators were called "Clearly or Probably Attributable" and "Principal or Secondary Diagnosis" respectively. These methods were compared with findings from a benchmark "Denominator Method", based on calculation of attributable risk, in order to evaluate the usefulness of the respective numerator methods.

Diabetes prevalence for elderly Texans enrolled in non-HMO Medicare was estimated by aggregating data from the National Health Interview Surveys for the years 1987 through 1994. Prevalence figures from the national surveys were applied across multiple strata including three age groups (65-74, 75-84, and 85+), two genders and three ethnic groupings (Hispanic/Native American, African American, White/Others). Because the Texas Hispanic population is primarily Mexican American, national figures for Cubans and Puerto Ricans were ignored. Hispanics and Native Americans in Texas were treated as one group, as were non-Hispanic Whites and Others. The weighted prevalence estimates for the respective demographic groups were pooled for an overall estimate of 9.77% diabetes prevalence among elderly Texans enrolled in Medicare. This figure was increased to account for half of incident cases during the year for a revised estimate of 10.12%.

Prevalence findings for the respective demographic groups were applied to person-months of non-HMO Medicare enrollment for Texas in 1995 to estimate diabetic and non-diabetic months of enrollment for each demographic group. Four alternative estimates were explored. The most straightforward, called the "Basic Estimate", was based on the overall 10.12% prevalence figure. An alternative estimate considered that many Mexican Americans were likely misclassified in the Medicare database as White or Other, and effort was made to gauge the size of the misclassification and to adjust accordingly. A third approach noted that analysis of the national surveys suggested, but did not statistically confirm, a temporal trend of increasing prevalence among the elderly, and linear projection to mid-1995 suggested a revised overall diabetes prevalence of 10.90%. A fourth alternative considered the joint effects of the ethnic re-classification and the adjustment for linear trend in prevalence, and yielded an estimated prevalence of 11.68%.

With no clear guidance as to which of the four alternative estimates might be most appropriate, the researcher noted the respective prevalence estimates for each demographic group and calculated 95% confidence intervals and associated relative confidence intervals. Application of prevalence data to person-months of non-HMO Medicare enrollment for the respective demographic groups yielded estimates of diabetic and non-diabetic months of enrollment along with associated confidence intervals. For comparison, the researcher introduced findings from the Texas Behavioral Risk Factor Survey for 1994-96. The prevalence estimate from that survey (12.57%) was high in comparison to those estimated from the National Health Interview Survey (NHIS). However, the associated confidence interval was very wide and included all four point estimates from the NHIS.

Information on hospital utilization and costs was drawn the 1995 MEDPAR file for Texas. The MEDPAR database included data on non-HMO short-stay hospital discharges in 1995 and it included demographic information, length of stay, diagnostic data and billing information, including deductibles, copays, amounts paid by third parties, and amounts paid by Medicare. Individual identifiers allowed for linkage with the enrollment database. Persons with diabetes were identified within the hospitalization database and records for all persons with and without diabetes in each demographic group were sorted according to methods described by Ray et al.[19] Number of hospital stays, days of stay and costs were tallied for each demographic group and for groups of diagnoses as described by Ray et al. Using alternative estimates of diabetic and non-diabetic months of non-HMO Medicare enrollment, the researcher calculated attributable risk for hospital stays, days of stay and costs for each demographic group and for each group of diabetic complications, including a residual group of unrelated conditions.

Findings varied depending on the prevalence estimates employed in the calculations. For example, point estimates for number of hospital stays ranged from 71,400 to 84,500, and attributed cost estimates ranged from $502 million to $592 million. The higher cost estimates reflected the lower basic prevalence estimates from the National Health Interview Survey. The lower estimates were based on the relatively high prevalence figures from the Behavioral Risk Factor Survey.

Findings from the attributable risk calculations were then compared to findings from the alternative numerator approaches to attributing utilization and costs to diabetes. The "Principal Diagnosis" method, which selected records having a first-listed diagnosis of diabetes yielded the lowest estimates. The "Clearly Attributable" method, which selected for certain principal diagnoses or combinations of diagnoses and DRGs among hospitals stays of persons known to have diabetes, yielded only a slightly greater cost figure, with no significant difference between the two lower bound cost estimates.

As expected, the "Principal or Secondary Diagnosis" method, which selected hospital stays having diabetes in any position in the medical record, yield an estimate much higher than that from the benchmark denominator methods. The "Clearly or Probably Attributable" method, which selected for a long list of principal diagnoses or combinations of diagnoses and DRGs among stays of persons known to have diabetes, yielded a cost estimate which was lower than the 95% confidence interval for cost estimates derived from NHIS prevalence information. However, the cost estimates were within the lower boundary for the confidence interval established from prevalence data drawn from the Behavioral Risk Factor Survey.

These findings were accentuated when the calculational procedure was reversed, that is, when utilization and costs findings from application of the two intermediate numerator approaches were used to estimate diabetes prevalence, and then directly compared with the alternative prevalence estimates from survey sources. The "Principal or Secondary Diagnosis" method produced prevalence estimates which were far too low, and the "Clearly or Probably Attributable" method produced estimates which, while high, were within the confidence interval established by the Texas Behavioral Risk Factor Survey. From these findings, the "Clearly or Probably Attributable" method was viewed as the more accurate method, although the cost estimates were somewhat low in relation to the benchmark figures.

Close comparison of findings for groups of diabetic complications as calculated from the "Clearly or Probably Attributable" method and the "Attributable Risk" method revealed that the "Attributable Risk" method substantially under-estimated costs which were directly attributable to diabetes and costs which were attributed to chronic complications of diabetes. Costs attributable to all "Other Unrelated Conditions" were, in turn, substantially over-estimated.

The researcher asked whether the "Clearly Attributable" method indeed selected only hospital stays of persons with diabetes, and found only four cases of hospital stays which were selected as "Clearly Attributable to Diabetes" among persons not identified as having diabetes within the database.

Similarly, the researcher asked whether any records identified as "Probably Attributable" to diabetes failed to mention diabetes among the various diagnoses, and found that, of more than 50,000 records identified as "Probably Attributable" to diabetes, 14% failed to mention the presence of diabetes. This finding suggests that hospitals often failed to identify persons with diabetes among their patients, even when the patients were hospitalized for common complications of diabetes.

Finally, the researcher asked whether records of hospital stays among persons with diabetes which were not selected as “Clearly or Probably Attributable” to diabetes mentioned diabetes. Of almost 73,000 hospitalizations meeting these criteria, more than 60,000 listed diabetes in the medical record. This finding, in contrast to the previous paragraph, suggests that hospitals frequently identified persons with diabetes in their care, even when the hospitalizations were probably not attributable to diabetes. In the alternative, the finding suggests that the list of conditions identified as “Probably Attributable to Diabetes” might be expanded.

The researcher examined congruence of findings from the respective numerator methods. The “Clearly Attributable” method selected all of the records selected by the “Principal Diagnosis” method, and only 16 additional hospital records. The “Principal and Secondary Diagnosis” and the “Clearly or Probably Attributable” methods agreed for 88% of hospital records. Of the 12% where there was disagreement, 1.3% were selected by the “Clearly or Probably Attributable” method, but rejected by the “Principal or Secondary Diagnosis” method; and 10.9% (60,000 hospitalizations) were selected by the latter method and rejected by the former.

B. Issues and Limitations

This study dealt only with hospital stays and costs among the elderly population. Most national studies of diabetes costs looked at all age groups. Thus, while it is tempting to apply lessons from this study back to the various national studies, the reader is advised to exercise great caution in doing so. The nature of diabetes and associated treatments likely differ for the elderly and non-elderly.[43]

On the basis of statistical analysis, the researcher elected to employ the intermediate definition of a person with diabetes. While this approach conforms to the literature, the small number of persons (7) added by the more inclusive approach suggests that more work can be done on the definition of a person with diabetes. This is of particular concern because we do not know the extent of costs for those seven individuals. This definitional concern is accentuated by the finding that four individuals were selected by the "Clearly Attributable" method even though they had no record in the database which mentioned diabetes.

We can rightfully question whether the National Health Interview Survey elicited accurate responses with respect to diagnosed diabetes. Because the NHIS relied on self-reports, there is reason to suspect that diabetes was under-reported.[11,54] Kenny et al. noted that studies have indicated excellent agreement between self-reports and medical records concerning diabetes status.[2] Two of the cited studies, however, were from Scandinavia[55-56] and another was from an affluent retirement community,[57] all relatively sophisticated users with ample access to care. Two other studies reported 95% and 98% congruence between self-reports and medical histories.[58-59] Of the medically diagnosed persons with diabetes interviewed by Kehoe et al., 16% responded "no" when asked if they have the disease.[58] While prevalence estimates from the medical data equaled prevalence from the population interview, that outcome stemmed from a balance of mismatched responses. Also, when proxy respondents answered for another family member, they may have under-reported diabetes,[60] and institutional residents, many with diabetes, were not included in the NHIS.[54] On the whole, evaluation of the NHIS indicated that the survey accurately captured diagnosed diabetes.[61]

A related problem is that many, many people simply do not know that they have diabetes,[60] and this study, by classifying those individuals as non-diabetic, made the assumption that inpatient costs for those individuals were not particularly large in comparison to persons without diabetes. In a hospital setting, one would expect that clinical manifestations of the disease would tend to result in its diagnosis. Thus, the undiagnosed cases were treated as pre-clinical and assumed to be of minor economic significance. The assumption is likely incorrect and, thus, costs of diabetes were under-estimated. The propensity to diagnose within the medical setting was partly offset by the inclusion of half of incidence within the prevalence estimates.

Application of national survey data to Texas is a questionable procedure even when data are applied across demographic strata. We cannot be certain that sub-populations in Texas have the same experience with respect to diabetes prevalence as national populations and, even if prevalence were identical, we cannot be certain that the Texas populations experience the same propensity to have their disease diagnosed.

Use of Medicare, non-HMO, Part A enrollment data assumed that diabetes prevalence and impact among HMO enrollees and non-enrollees did not differ from that among regular Medicare enrollees; and that presence or absence of diabetes did not differentially influence propensity to enroll in HMOs. National data suggest that there were small differences between people with and without diabetes in the proportion covered and their types of health coverage.[48] However, at least one researcher reports that, among elderly Mexican Americans, 90.7% of those without diabetes had Medicare coverage, compared to 95.4% for those with diabetes.[62]

In the estimation of diabetes prevalence, this study included an adjustment for half of incidence, and that calculation resulted in a downward adjustment for attributable costs under the denominator method. However, there was not a corresponding adjustment for half of mortality within the diabetic population. This means that the assumption that persons with and without diabetes had, on average, equal numbers of months of Medicare enrollment is flawed. It is more appropriate to expect that persons with diabetes, who likely had higher mortality, tended to have less months of enrollment, on average, than persons without diabetes.

There are some problems with the way in which this study applied the linear trend in prevalence for an alternative cost estimate under the denominator method. We do know that, over the years, the NHIS has measured increasing diabetes prevalence for the overall population.[4] However, any trend among the elderly from 1987 through 1994 was not statistically significant in this study. The researcher chose to employ the adjustment anyway. This created a problem in the calculation of the confidence interval because the confidence interval for a projection is larger than that for the measured years of study.

Incorrect estimation of diabetes prevalence would have substantial effects. If prevalence were under-estimated, then diabetes costs would be over-estimated. If prevalence was over-estimated, then costs would be under-estimated. Indeed, within this study, an increased prevalence estimate by less than one percentage point, from 11.67% to 12.57%, reduced the cost estimate by almost $34 million.

This study did not successfully address the problem of ethnic misclassification within the Medicare records. The author attempted to estimate the size and direction of the error, and to make the appropriate re-allocation of months of enrollment. But the author did not similarly re-allocate utilization and, on inspection of estimated costs by age and ethnic groups, it is clear that something is amiss. Even with the correction, the attributed costs among Hispanic males ages 85 and older were negative! This finding may not influence the overall cost estimates, but it does remind us to avoid comparisons of ethnic groups within this study.

We have alternative estimates for diabetes prevalence among minority populations. One study placed prevalence among the Hispanic elderly at 22%.[63] Another described prevalence among African Americans ages 65-74 as 22%.[64] Given that the two groups made up about one-fifth of the Texas elderly population in 1995, we can make some quick calculations regarding the accuracy of our prevalence estimates. If the remaining population had a prevalence of 10%, then overall prevalence would have been about 12.5%, a figure which corresponds to the prevalence estimate from the Texas Behavioral Risk Factor Survey.

It is this author's studied opinion that the Attributable Risk methods employed in this study to allocate costs were flawed. When diabetes was among the diagnoses, the case was not considered "Directly Attributable to Diabetes" unless it also had a diabetes-related DRG. Otherwise, the case was relegated to complications or a residual category of unrelated conditions. Also, in order for a hospitalization to be attributed to a diabetic complication, the method required that the record not only have a principal diagnoses for the complication, but also a DRG appropriate to the complication and a secondary diagnosis of diabetes or hypoglycemia. Otherwise, the case also was pushed into the residual category. As we have seen from this study, about 17% of the records identified as "Probably Attributable" to diabetes neglected to mention diabetes in the medical record. In such situations, the calculations employed for diabetic complications under-estimated costs for those complications. The error did not affect the estimate of total attributed cost, because, when the attributable risk formula was applied to the residual category, the missing costs were recovered. Nevertheless, the study did not correctly estimated the attributable risks for diabetic complications, and any effort to apply those figures to parse out the impact of diabetes on those related diseases would under-estimate the impacts of diabetes. For example, the impact of diabetes on heart disease would be under-estimated.

By way of comparison, the researcher presents findings from an alternative approach to calculating attributable risk. As described in the review of the literature, the report on the ADA sponsored study was ambiguous with regard to methods employed. The alternative interpretation was that records were considered as attributable to chronic complications of diabetes when the records had any diagnosis of the complication, a DRG appropriate to the complication, and any diagnosis of diabetes. However, because, in some cases, the same DRG could be used for more than one type of complication, this would create potential for multiple counts of a single record. While the report from the ADA sponsored study assures us that the chronic disease categories were mutually explusive,[19] it did not describe any procedure for assigning such records to a single category. Using this alternative procedure, the researcher found 1,937 records for persons with diabetes which were assigned to more than one chronic disease category. Such cases were assigned to chronic disease categories in the order presented by the tables within the report from the ADA sponsored study: neurologic, cardiovascular-heart, cardiovascular-artery, cardiovascular-vein, renal, endocrine/metabolic, ophthalmic, and other complications.

Table 19 compares findings from the two approaches as applied to Texas Medicare data for number of hospital stays attributable to diabetes in comparison to the attributed number of stays among the elderly presented in the report from the ADA sponsored study. The figures for Texas used person-months of diabetic and non-diabetic enrollment as calculated from NHIS findings without adjustment for linear trend in prevalence or ethnic misclassification within the Medicare records. The ADA figures are based on Medicare inpatient records nationally.

We can immediately observe that almost 15% of the attributed stays from the ADA study were directly attributed, compared to about 5% for Texas. Both

Table 19. Distribution of Number of Attributed Hospital Stays Using Two Alternative Methods of Selecting Records for Attributable Risk Calculations Among the Texas Elderly with Non-HMO Medicare Coverage in 1995 Compared to National Findings for the Elderly in 1992; By Category of Attribution

	Method Employed in this Study of Texas Medicare		Alternative Method Applied to Texas Medicare		Findings from ADA Sponsored Study	
Attribution Category	**Stays**	**Percent**	**Stays**	**Percent**	**Stays**	**Percent**
Overall Categories						
Directly Attributed	4,272	5.1	4,272	5.1	145,922	14.8
Complications	23,669	28.0	26,065	30.8	460,534	46.6
Unrelated Comorbidities	56,555	66.9	54,158	64.1	382,345	38.7
Total	84,496	100.0	84,496	100.0	988,801	100.0
Complications						
Neurologic	4,234	17.9	4,324	16.6	83,039	18.0
Cardiovascular-Heart	14,152	59.8	15,539	59.6	291,075	63.2
Cardiovascular-Artery	1,066	4.5	1,778	6.8	24,466	5.3
Cardiovascular-Vein	289	1.2	251	1.0	5,224	1.1
Renal	3,499	14.8	3,645	14.0	46,767	10.2
Endocrine/Metabolic	150	0.6	209	0.8	2,124	0.5
Ophthalmic	42	0.2	74	0.3	2,342	0.5
Other	238	1.0	245	0.9	5,497	1.2
Total Complications	23,669	100.0	26,065	100.0	460,534	100.0

methods for Texas produced the same number of directly attributable stays. The methods applied to the Texas data were less likely to attribute stays to diabetic complications. However, the alternative method did better in this respect. The reasons for this finding are unclear, and are perhaps related to coding practices in Texas, or to propensity toward hospitalization among elderly persons with diabetes in Texas for conditions not directly related to diabetes or not associated with the recognized complications of diabetes. The percentage distribution among the complications for Texas was similar to the distribution found in the national study. The exception is renal disease which was relatively more common in Texas.

Among other considerations with respect to limitations of this study are that, within the medical care system, there is little consistency or completeness in the identification and coding of diseases,[65] and omission of diabetes from the medical record is common.[36,38] If an individual with diabetes had no hospitalization during the year which mentioned the disease in the record, then that individual's care would be counted as non-diabetic. In such cases, under the attributable risk calculation, those costs would be counted among the non-diabetic population resulting in under-estimation of costs of diabetes. Given the extent to which diabetes is omitted from medical records and the infrequency of hospital admission of any given individual during a single year, we must conclude that the error is common.

This study did not successfully control for independent factors which influence both diabetes and the putative complications of diabetes. For example, obesity can increase the impact of diabetes and it can independently influence heart diseases. In such situations, the added costs would be incorrectly attributed to diabetes, and the calculations for attributable risk would not factor out those independent effects.[33]

Diabetes would appear to increase rates of hospital utilization for a broad variety of conditions which are not obvious sequelae of diabetes, and it is unclear whether the presence of diabetes directly increases the likelihood of the other conditions, thus prompting hospital admission, or whether diabetes simply exacerbates what would otherwise be treated in an outpatient setting. Also, physician response may differ once the physician is aware that the patient has diabetes, resulting in a greater propensity to hospitalize and a general increase in intensity of care.[65]

The reader should be aware of a discussion in the literature which criticizes the manner in which attributable risk calculations have been applied to estimate costs of diabetes. Normally, the calculations for the "Attributable Risk among the Exposed" and the "Population Attributable Risk" would yield identical answers once the calculated risk is applied to the appropriate cost figure (among the exposed, or for the total population). However, when the various pieces of the estimates are drawn from divergent sources, and combined synthetically, the two attributable risk procedures can yield different results, both biased.[15,33] This study was not subject to that error because, even though prevalence data were taken from external sources, all enrollment, utilization and cost figures came from a single linked database.[34]

The reader should also understand that approaches to conduct of cost-of-illness studies differ. The most general distinction is between "top-down" and "bottom-up" studies. In the former type of study, the researcher begins with global costs of all disease and tries to allocate costs between or among the respective diseases. In the latter type of study, the researcher is not concerned with global costs, and focuses on building a cost estimate for the disease of interest from information on expenditures or economic inputs.[44] The methods used in this study would be described as "bottom-up" efforts.[15]

In the health care economy, the notion of economic cost is suspect. The calculations employed expenditure data and, while we would like to think that these approximate the social costs of diabetes, in fact, health care markets have few of the free market characteristics that an economist would like to see. Expenditure data reflect negotiated or prescribed prices in a market where consumers have little price information and little control over health care decisions. Health care markets are not perfectly competitive, there are regulatory barriers to entry, price regulations, insurance which insulates consumers from health care costs, and limited asymmetric information regarding provider-specific prices and outcomes.[43] The prices paid under the DRG system rely substantially on average cost information for large groups of cases within diagnostic groups, and are based on average prediction.[66] This is not the same as information on individual costs of care. For example, we have no details on types of services received by Medicare patients while hospitalized. One of the problems of the DRG system is that it reduces measurement of costs of comorbidities, which are common among the elderly.[43] Thus, amounts paid are, at best, a rough approximation of opportunity costs. For the purposes of this study, they may suffice because this study compares alternative approaches to estimating costs and does not claim to definitively estimate the social costs of diabetes.

A broader set of issues about costing methods deals with the focus on average costs when data on marginal costs would be more relevant to the setting of priorities regarding efficient use of health care resources. In this respect, it would be most useful to identify opportunities for cost reduction. For example, studies which estimate the present value of all future costs for incident cases of diabetes or an associated complication of diabetes would be useful for estimating societal benefits which might accrue from disease prevention.[15]

C. Implications

The finding that the "Principal or Secondary Diagnosis" method over-estimates utilization and costs attributable to diabetes was as expected. Because so many of the complications of diabetes are common among people without diabetes, inclusion of all records which mention diabetes would over-estimate costs of the disease, even when it is common to incorrectly omit mention of diabetes from medical records.

On the other hand, the researcher had fewer expectations regarding the "Clearly or Probably Attributable" method, other than a general feeling that the list of attributable diagnostic combinations was conservative. While it is not clear that the method is accurate in its present form, the researcher suggests that the method can be re-visited to make it more inclusive. This could be accomplished by reviewing the diagnostic codes which were not defined as "Probably Attributable", but which are common among persons with diabetes, and selecting those which are "Somewhat Less Probably Attributable" to diabetes. For example, the researchers who developed the method reserved a number of diagnostic combinations for future study.[18] This exercise could be accomplished by expert opinion or, more appropriately, by empirical investigation of relative costs among the unselected diagnostic codes. For this purpose, the researcher recommends that those 60,000 hospitalizations selected under the "Principal or Secondary Diagnosis" method, but rejected by the "Clearly or Probably Attributable" method, be reviewed for selected principal diagnoses which create high costs for persons with diabetes in comparison to persons without diabetes. The codes could be iteratively added to the scheme until the "correct" answer is reached. A consideration in such an exercise is the issue of diagnoses, such as pneumonia, which are not generally recognized as diabetic complications, but which are more common among those with diabetes. Perhaps researchers could examine such diagnoses to determine if it is appropriate to assign some percentage of those cases to diabetes in situations where the patient is known to have diabetes. Note that the "Clearly or Probably Attributable" method does not pretend to correctly select those hospitalizations which are "caused" by diabetes. Rather, it attempts to balance errors of inclusion and exclusion in order to reach a reasonable estimate of total attributable costs.

As an alternative to this methodological exercise, researchers who are limited to numerator databases may wish to simply make crude adjustments. For example, reduction of the cost finding from the "Principal or Secondary Diagnosis" method by 35% would make it comparable to the finding from the attributable risk method which was based on prevalence estimates from the Texas Behavioral Risk Factor Survey. Alternately, the finding from the "Clearly or Probably Attributable" method could be increased by about 25% to achieve the same result. While such simplistic approaches are appealing, the reader is reminded that this study dealt only with the elderly in Texas, and no claims are made regarding generalization to other populations.

There is a temptation to look at prior studies and make rough adjustments. But, as previously explained, this study was limited to the elderly, and the previous national studies looked at the overall population. Also, we must consider that record-keeping with respect to diabetes has changed over the years. For example, Entmacher and colleagues found, in a study of all age groups in 1980, that the "Principal or Secondary Diagnosis" method yielded 3.2-3.6 times the costs found by the "Principal Diagnosis" method.[24] Two similar studies yielded a hospitalization ratio of 3.8 for the year 1980 and a ratio of 6.7 in 1990.[51] Clearly, there is some increasing propensity, over the years, to list diabetes among secondary diagnoses in the medical records. Also, there may be increasing propensity to place the diabetic complication in the first diagnostic position and to move diabetes to a secondary position. In this study of the elderly in Texas using the "Principal or Secondary Diagnosis" method, the ratio was about 14.5/1, a finding which, no doubt, reflects the high prevalence of chronic complications among the elderly.

While it appears inappropriate to make corrections to older studies of inpatient costs, we can look at the more recent study of diabetes costs in Texas for 1992.[17-18] That study, which relied on the "Clearly or Probably Attributable" method, estimated Medicare inpatient costs, including deductibles, for all ages at $387 million. Application of a 25% upward adjustment would correct the finding to about $484 million. And, if we were to make the leap of faith that the correction could be applied to other items which used the same type of calculations, then Medicare outpatient costs (including physician/supplier, ambulatory surgery, and amounts paid by other parties) would increase from $414 million to $518 million; Medicaid inpatient, outpatient and physician services costs would increase from $68 million to about $85 million; and uninsured costs for public hospitals would increase from $98 million to $122 million. Overall, the estimates for direct medical costs would increase from $1.63 billion to about $1.87 billion; and the summary estimate of $4.02 billion for direct and indirect costs of diabetes in Texas would be revised to $4.26 billion.

The researcher recommends that, in the conduct of future cost studies, researchers take a closer look at alternative approaches to selecting records for attribution to diabetic complications. We have seen that the method employed in this study is flawed and it tended to assign records to the residual category of unrelated conditions. As a consequence, that category constituted an inordinate share of the total attributed costs. However, the alternative method only partly solves the problem, and it too is flawed by its potential for allocating records to more than one category of complications. Perhaps the problem is unavoidable due to the nature of diabetes and its many comorbidies.

This study has some broader implications for health services researchers. The first of these is that there is increasing need to understand the ICD coding practices in the field, and perhaps it would be useful to influence those practices to achieve greater accuracy in coding.

This study contributes to methods for cost of illness studies, particularly to methods for attributing hospital utilization and costs to diabetes. The "benchmarking" of alternative numerator methods for attribution against a denominator method yielded previously unavailable data which can contribute to comparison among existing studies of diabetes costs and to planning for future studies. This was accomplished by systematic comparison of findings from application of differing definitions of diabetes, and of alternative numerator methods for attributing utilization and cost to diabetes with a benchmark denominator method. The researcher examined numerator methods to determine if they reasonably approximated findings from the denominator method. And the researcher examined the consequences of flaws in the denominator approach employed. Even if the numerator methods are less than adequate, researchers who lack appropriate denominators have a better sense of the direction and extent of resulting errors. Thus, the study clarifies reasons for disparate findings of previous studies, and informs future researchers about the implications of alternative choices regarding the definition of diabetes and methods for attribution.

While this study focussed on diabetes, there are a number of chronic and other diseases where the problems of costing are similar. This study sets forth a procedure for testing numerator methods, and researchers looking at other chronic diseases could adapt the procedure to their areas of specialty. More broadly, the study enhances information about the contribution of diabetes to other chronic diseases, and efforts to parse out risk factors for those chronic diseases can benefit from increased understanding of the relationship between diabetes and its non-specific chronic complications.

This study informs public policy. In Texas, with a large and aging Hispanic population, there is concern that future costs of diabetes may be much greater than today. Attention to elderly minority populations focuses attention on the health status of vulnerable groups. Enhanced information about the relationship between diabetes and its complications and their costs supports priority setting, allocation of resources, and planning for prevention and treatment.

APPENDICES

APPENDIX A: DIAGNOSTIC CODES USED TO SORT INPATIENT RECORDS AS SET FORTH BY WARNER ET AL.[18]

Note that certain criteria employ procedure codes. These criteria, not employed for this report, were developed for future study.

I. IDENTIFICATION OF PERSONS WITH DIABETES

Persons having either ICD-9 250, 251.0 or 251.2 as either primary or secondary diagnosis. All claims for these individuals during 1992 were captured from the database.

250	Diabetes mellitus
251.0	Hypoglycemic coma
251.2	Hypoglycemia, unspecified

II. ESTIMATE OF COSTS CLEARLY ATTRIBUTABLE TO DIABETES

Any claim in the database for a person with diabetes having a primary diagnosis of 250, 251.0 or 251.2, or a primary diagnosis from the following list:

A. Neurological Complications

337.1	(if 250.6 is listed among secondary diagnoses) - Peripheral autonomic neuropathy in disorders classified elsewhere (if diabetes with neurological manifestations is listed)
357.2	Polyneuropathy in diabetes
358.1	(if 250.6 is listed among secondary diagnoses) - Myasthenic syndromes in diseases classified elsewhere (if diabetes with neurological manifestations is listed)
713.5	(if 250.6 is listed among secondary diagnoses) - Arthropathy associated with neurological disorders (if diabetes with neurological manifestations is listed)
731.8	(if 250.8 is listed among secondary diagnoses) - Other bone involvement in diseases classified elsewhere (if diabetes with other specified manifestations is listed)

B. Cardiovascular Complications - Artery

443.81	(if 250.7 is listed among secondary diagnoses) - Peripheral angiopathy in diseases classified elsewhere (if diabetes with peripheral circulatory disorders is listed)
785.4	(if 250.7 is listed among secondary diagnoses) - Gangrene (if diabetes with peripheral circulatory disorders is listed)

C. Cardiovascular Complications - Heart
None

D. Renal Complications
581.81 (if 250.4 is listed among secondary diagnoses) - Nephrotic syndrome in diseases classified elsewhere (if diabetes with renal manifestations is listed)
583.81 (if 250.4 is listed among secondary diagnoses) - Nephritis and nephropathy, not specificed as acute or chronic, in diseases classified elsewhere (if diabetes with renal manifestations is listed)

E. Endocrine and Metabolic Complications
None

F. Ophthalmic Complications
362.0 Diabetic retinopathy
364.4 Vascular disorders of iris and ciliary body
366.41 (if 250.5 is listed among secondary diagnoses) - Diabetic cataract (if diabetes with ophthalmic manifestations is listed)

G. Other Complications
648.0 Diabetes mellitus (complicating pregnancy, but excluding gestational diabetes)
790.2 Abnormal glucose tolerance test (excluding that complicating pregnancy)

III. ESTIMATE OF COST PROBABLY ATTRIBUTABLE TO DIABETES
Any claim in the database for a person with diabetes having a primary diagnosis from the following list. Note that if inclusion of a diagnosis is conditioned on presence of a DRG, procedure ICD or CPT, and such data were not available, then that diagnosis was included.

A. Neurological Complications
337.1 (if 250.6 is not listed among secondary diagnoses) – Peripheral autonomic neuropathy in disorders classified elsewhere (if diabetes with neurological manifestations is not listed)
352.9 Unspecified disorder or cranial nerves
354 Mononeuritis of upper limb and mononeuritis multiplex
355 Mononeuritis of lower limb and unspecified site
358.1 (if 250.6 is not listed among secondary diagnoses) - Myasthenic

syndromes in diseases classified elsewhere (if diabetes with neurological manifestations is not listed)

430 Subarachnoid hemorrhage
431 Intracerebral hemorrhage
432 Other and unspecified intracranial hemorrhage
433 Occlusion and stenosis of precerebral arteries
434 Occlusion of cerebral arteries
435 Transient cerebral ischemia
436 Acute, but ill-defined, cerebrovascular disease
437.0 Cerebral atherosclerosis
437.1 Other generalized ischemic cerebrovascular disease
437.7 Transient global amnesia
437.8 Other (other and ill-defined cerebrovascular disease)
437.9 Unspecified (other and ill-defined cerebrovascular disease)
438 Late effects of cerebrovascular disease
713.5 (if 250.6 is not listed among secondary diagnoses) - Arthropathy associated with neurological disorders (if diabetes with neurological manifestations is not listed)
729.2 Neuralgia, neuritis and radiculitis, unspecified
731.8 (if 250.8 is not listed among secondary diagnoses) - Other bone involvement in diseases classified elsewhere (if diabetes with other specified manifestations is not listed)

B. Cardiovascular Complications - Artery

401 Essential hypertension
402 Hypertensive heart disease
403 Hypertensive renal disease
404 Hypertensive heart and renal disease
405 Secondary hypertension
440 Atherosclerosis
441 Aortic aneurism
442 Other aneurism
443.1 Thromboangiitis obliterans
443.8 (if no 5th digit) - Other specified peripheral vascular diseases
443.81 (if 250.7 is not listed among secondary diagnoses) - Peripheral angiopathy in diseases classified elsewhere (if diabetes with peripheral circulatory disorders is not listed)
443.9 Peripheral vascular disease, unspecified
444 Arterial embolism and thrombosis
447.0 Arteriovenous fistula, acquired
447.1 Stricture of artery
447.2 Rupture of artery

447.9 Unspecified disorders of arteries and arterioles
458.0 Orthostatic hypotension
459.0 Hemorrhage, unspecified
707.1 Ulcer of lower limbs, except decubitis
707.8 Chronic ulcer of other specified sites
707.9 Chronic ulcer of other unspecified sites
785.4 (if 250.7 is not listed among secondary diagnoses) - Gangrene (if diabetes with peripheral circulatory disorders is not listed)
885 (if DRG 108, 110-114, 130-131, or 285 is listed) - Traumatic amputation of thumb (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)
886 (if DRG 108, 110-114, 130-131, or 285 is listed) - Traumatic amputation of other finger (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)
887 (if DRG 108, 110-114, 130-131, or 285 is listed) - Traumatic amputation of arm and hand (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)
895 (if DRG 108, 110-114, 130-131, or 285 is listed) - Traumatic amputation of toe
896 Traumatic amputation of foot (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)
897 (if DRG 108, 110-114, 130-131, or 285 is listed) - Traumatic amputation of leg (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)
ITEM FOR FUTURE STUDY - Procedure ICD 84.1 (if DRG 108, 110-114, 130-131, or 285 is listed) - Amputation of lower limb (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)
ITEM FOR FUTURE STUDY - CPTs 27290, 27295, 27590-2, 27598, 27880-2, 27888-9, 28800, 28805, 28810, 28820, 28825 (if DRG 108, 110-114, 130-131, or 285 is present) - Selected CPT codes for amputations (if DRG for selected cardiothor proc, vascular procedures, amputations, vascular disorders, or hand ganglion procedures is present)

C. Cardiovascular Complications - Heart
410 Acute myocardial inforactions
411 Other acute and subacute forms of ischemic heart disease

412	Old myocardial infarction
413	Angina pectoris
414	Other forms of chronic ischemic heart disease
425.4	Other primary cardiomyopathies
425.9	Secondary cardiomyopathy, unspecified
426	Conduction disorders
427	Cardiac dysrhythmias
428	Heart failure
429.1	Myocardial degeneration
429.3	Cardiomegaly

D. Renal Complications - NOTE: Added criteria regarding procedure ICD codes and CPT codes held for future study.

567.2	(if procedure ICD 54.98 or CPT 90966-9, 90976-9, 90982-5, 90994 is present) - Other suppurative peritonitis (if procedure ICD or selected CPT codes for peritoneal dialysis is present)
567.8	(if procedure ICD 54.98 or CPT 90966-9, 90976-9, 90982-5, 90994 is present) - Other specified peritonitis (if procedure ICD or selected CPT codes for peritoneal dialysis is present)
581.8	(if no 5th digit is available) - Nephrotic syndrome
581.81	(if 250.4 is not listed among secondary diagnoses) - Nephrotic syndrome in diseases classified elsewhere (if diabetes mellitus with renal manifestations is not listed)
581.9	Nephrotic syndrome with unspecified pathological lesion in kidney
583.8	(if no 5th digit is available) - Nephritis and nephropathy with other specified pathological lesion in kidney
583.81	(if 250.4 is not listed among secondary diagnoses) - Nephritis and nephropathy in diseases classified elsewhere (if diabetes mellitus with renal manifestations is not listed)
583.9	Nephritis and nephropathy with unspecified pathological lesion in kidney
585	Chronic renal failure
586	Renal failure, unspecified
587	Renal sclerosis, unspecified
588	Disorders resulting in impaired renal function
590	Infections of kidney
593.1	Hypertrophy of kidney
593.6	Postural proteinuria
593.8	(if no 5th digit available) - Other specified disorders of kidney and ureter
593.81	Vascular disorders of kidney
595.0	Acute cystitis
595.3	Trigonitis

595.9 Cystitis, unspecified
596.4 Atony of bladder
596.5 (if no 5th digit available) - Other functional disorders of bladder
596.53 Paralysis of bladder
596.54 Neurogenic bladder NOS
596.9 Unspecified disorder of bladder
599.0 Urinary tract infection, site not specified
791.0 Proteinuria
791.5 Glycosuria
791.6 Acetonuria
ITEM HELD FOR FUTURE STUDY - Procedure ICDs 39.27, 39.93-39.95, 52.8, 54.93, 54.98, 55.6 - Selected procedures for renal dialysis, insertion or replacement of vessel-to-vessel cannula, pancreas transplant, endoscopic dilation of pancreatic duct, and kidney transplant
ITEM HELD FOR FUTURE STUDY - CPTs 36145, 36800, 36810, 36815, 36820, 36835, 48160, 49420-1, 50360, 50365-6, 50380, 90941-4, 90951-8, 90966-9, 90976-9, 90982-5, 90988, 90991, 90994, 90999 - Selected CPT codes for procedures listed immediately above

E. Endocrine and Metabolic Complications
272.0 Pure hypercholesteremia
272.1 Pure hyperglyceridemia
272.2 Mixed hyperlipidemia
272.3 Hyperchylomicronemia
272.4 Other and unspecified hyperlipidemia
276.7 Hyperpotassemia

F. Ophthalmic Complications
362.1 Other background retinopathy and retinal vascular changes
362.2 Other proliferative retinopathy
362.3 Retinal vascular occlusion
362.4 Separation of retinal layers
362.5 (if no fifth digit available) - Degeneration of macula and posterior pole
362.50 Macular degeneration, unspecified
362.51 Nonexudative senile macular degeneration
362.52 Exudative senile macular degeneration
362.53 Cystoid macular degeneration
362.54 Macular cyst, hole or pseudohole
362.8 Other retinal disorders
362.9 Unspecified retinal disorder

365.0	(if no 5th digit available) - Borderline glaucoma
365.00	Preglaucoma unspecified
365.01	Open angle with borderline findings
365.04	Ocular hypertension
365.1	(if no 5th digit available) - Open-angle glaucoma
365.10	Open angle glaucoma, unspecified
365.11	Primary open angle glaucoma
365.12	Low tension glaucoma
365.15	Residual stage of open angle glaucoma
365.5	(if no 5th digit available) - Glaucoma associated with disorders of the lens
365.51	Phacolytic glaucoma
365.6	(if no 5th digit available) - Glaucoma associated with other ocular disorders
365.60	Glaucoma associated with unspecified ocular disorder
365.63	Glaucoma associated with vascular disorders
366.0	Infantile, juvenile and presenile cataractataract
366.1	Senile cataract
366.3	Cataract secondary to ocular disorders
366.4	(if no 5th digit) - Cataract associated with other disorders
366.5	After-cataract
366.8	Other cataract
366.9	Unspecified cataract
368.1	(if no 5th digit) - Subjective visual disturbances
368.10	Subjective visual disturbance, unspecified
368.11	Sudden visual loss
368.12	Transient visual loss
368.2	Diplopia
368.3	Other disorders of binocular vision
368.4	Visual field defects
368.8	Other specified visual disturbance
368.9	Unspecified visual disturbance
369	Blindness and low vision
377.1	(if no 5th digit available) - Optic atrophy
377.14	Glaucomatous atrophy of optic disc
377.4	(if no 5th digit available) - Other disorders of optic nerve
377.41	Ischemic optic neuropathy
377.5	(if no 5th digit available) - Disorders of optic chiasm
377.53	Disorders of vascular chiasm associated with vascular disorders
377.6	(if no 5th digit available) - Disorders of other visual pathways
377.62	Disorders of other visual pathways associated with vascular disorders

G. Other Complications

112.1	Candidiasis of vulva and vagina
112.2	Candidiasis of other urogenital sites
112.3	Candidiasis of skin and nails
380.1	Infectious otitis externa
558.9	Other and unspecified noninfectious gastroenteritis and colitis
607.8	(if no 5th digit available) - Other specified disorders of penis
607.84	Impotence of organic origin
709.3	Degenerative skin disorders
716.9	Arthropathy, unspecified
730.1	(if no 5th digit) - Chronic osteomyelitis
730.17	Chronic osteomyelitis of ankle and foot

APPENDIX B: DIAGNOSTIC CODES USED TO SORT INPATIENT RECORDS AS SET FORTH BY RAY ET AL.[19]

Individuals having any record with an ICD-9 of Diabetes (250) or Hypoglycemia (251.0 or 251.2) were classified as persons with diabetes. All other persons were consider non-diabetic.

I. Directly Attributable to Diabetes

Hospitalizations with a diagnosis of Diabetes Mellitus (ICD 250) or Hypoglycemia (251.0 or 251.2) and a diabetes-related DRG (294 or 295). These records were counted as 100% attributable to diabetes.

II. Chronic Complications of Diabetes

Hospitalizations of diabetic persons with a principal diagnosis of a chronic complication of diabetes (see list below), a secondary diagnosis of Diabetes or Hypoglycemia (ICD 250, 251.0, or 251.2), and a DRG for a chronic complication of diabetes (see below) were attributed to chronic complications of diabetes. Hospitalizations of non-diabetic persons having principal diagnoses and DRGs for chronic complications of diabetes were identified, and the researchers calculated attributable risk for the diabetic population for each of eight groups of complications.

A. Neurological Complications

Amyotrophy – ICD 358.1 and DRG 12
Diabetic bone changes (charcot's joint) – ICD 731.8 and DRG 244 or 245
Embolic stroke, occlusion of arteries – ICD 434 and DRG 14
Extraocular muscle palsy – ICD 356.8 and DRG 18 or 19
Hemorrhagic stroke – ICD 430-432 and DRG 14
Late effects of cerebrovascular disease – ICD 438 and DRG 12
Mononeuropathy of upper and lower limb – ICD 354 or 355 and DRG 18 or 19
Diabetic arthropathy – ICD 713.5 and DRG 244 or 245
Occlusion and stenosis of precerebral artery – ICD 433 and DRG 15
Other and ill-defined cerebrovascular disease – ICD 437 and DRG 14, 17, 22, 24, 25, 26, 34 or 35
Peripheral autonomic neuropathy – ICD 337.1 and DRG 18 or 19
Polyneuropathy due to diabetes – ICD 357.2 and DRG 18 or 19
Radiculopathy – ICD 729.2 and DRG 7, 8, 18 or 19
Stroke, unspecified – ICD 436 and DRG 14
TIAs – ICD 435 and DRG 5, 7, 8 or 15
Diabetes with neurological complications – ICD 250.6 and DRG 18 or 19

B. Cardiovascular Complications: Artery

Aortic and other aneurisms – ICD 441-442 and DRG 108,110-111, 121, 130-133 or 144-145

Atherosclerosis – ICD 440 and DRG 106-107, 130-131 or 331-333

Diabetic ulcers – ICD 707 and DRG 113-114, 285, 287, 263-264 or 271

Embolism and thrombosis, stricture of artery – ICD 444, 447.1, 785.4 or 885-887 and DRG 108, 110-112 or 130-131

Gangrene and amputations – ICD 895-897 and DRG 113-114, 130-131, 285 or 444-446

Hypertension (all types) – ICD 401-405 and DRG 134

Peripheral vascular disease – ICD 443 and DRG 119, 130-131 or 240-241

Postural hypotension – ICD 458 and DRG 121, 141-142 or 144-145

Unspecified circulatory system disorders – ICD 459 and DRG 110-111, 130-133 or 144-145

C. Cardiovascular Complications: Heart

Angina – ICD 413 and DRG 140

Arrhythmia – ICD 426-427 and DRG 121-125 or 138-139

ASCVD – ICD 429.2 and DRG 132-133

Cardiomegaly – ICD 429.3 and DRG 106-107 or 132-133

Cardiomyopathy – ICD 425 and DRG 124-125 or 144-145

Chronic ischemic heart disease including angina – ICD 411 and DRG 121-125, 140 or 144-145

Congestive heart failure – ICD 428 and DRG 115-116, 121-125 or 127

Diabetes with cardiovascular complications – ICD 250.7 and DRG 130-131

Myocardial degeneration – ICD 429.1 and DRG 144-145

Myocardial infarction – ICD 410 or 412 and DRG 108-109, 112, 115-116, 121-123 or 132-133

Other ischemic heart disease – ICD 414 and DRG 121-123, 132-133 or 144-145

D. Cardiovascular Complications: Vein

Phlebitis and thrombophlebitis, portal vein thrombosis and thrombolism and venous embolism – ICD 451-452 and DRG 110-112, 128, 130-131 or 205-206

Other venous embolism and thrombolism – ICD 453 and DRG 112, 128, 130-131 or 205-206

Varicose veins of lower extremities – ICD 454 and DRG 119 or 130-131

E. Renal Complications

Acute pyelonephritis, kidney infections – ICD 590 and DRG 320-322

Bladder dysfunction – ICD 596 and DRG 331-333

Cystitis – ICD 595 and DRG 308-311 or 320-322

Glomular lesions, glomeruloscleosis/Kimmelstein-Wilson syndrome – ICD

587 and DRG 323-324 or 331-333
Nephritis/nephrotic syndrome – ICD 580-583 and DRG 331-333
Proneinuria, albuminuria – ICD 791 and DRG 325-327
Pyelonephritis, unspecified – ICD 590.8 and DRG 320-322
Renal failure and its sequelae – ICD 584-586 or 588 and DRG 302, 315-316 or 331-333
Unspecified disorders of the kidney – ICD 593 and DRG 320-324 or 331-333
Urinary tract infection – ICD 599.0 and DRG 320-322
Diabetes and renal complications – ICD 250.4 and DRG 304-305, 315 or 331-333

F. Endocrine/Metabolic Complications
Dwarfism-obesity syndrome – ICD 258.1 and DRG 300-301
Glycogenosis – ICD 271 and DRG 299
Hemochromatosis (iron disorder) – ICD 275.0 and DRG 299
Hypercholesterolemia – ICD 272.0 and DRG 299
Hyperchylomicronemia – ICD 272.3 and DRG 299
Hyperkalemia – ICD 276.7 and DRG 296-298
Hypertriglyceridemia – ICD 272.1 and DRG 299
Hyperviscosity – ICD 273.3 and DRG 403-404
Lancereaux's disease (diabetes mellitus with marked emaciation) – ICD 261 and DRG 296-298
Lipoidosis – ICD 272.7 and DRG 299
Other specified endocrine disorders – ICD 259.8 and DRG 300-301
Secondary hyperlipoproteinemia – ICD 272.4 and DRG 299
Xanthoma – ICD 272.2 and DRG 299

G. Ophthalmic Complications
Cataract – ICD 366 and DRG 39 or 46-48
Diabetic retinopathy – ICD 362 and DRG 36 or 46-48
Glaucoma (including neurovascular) – ICD 365 and DRG 42 or 46-48
Iritis – ICD 364.4 and DRG 28 or 46-48
Optic neuropathy (disorders of the optic nerve and visual pathways) – ICD 377 and DRG 45 or 46-48
Other retinal disorders (proliferative retinopathy, retinal edema, retinitis, retinal microaneurysms, etc) – ICD 362.0, 365.6 or 362.8-362.9 and DRG 46-48
Visual disturbance, low vision, blindness – ICD 368-369 and DRG 45-48
Diabetes with ophthalmic complications – ICD 250.5 and DRG 46-48

H. Other Complications
Bacteremia, bacterial infection, Coxsackie virus – ICD 79.2 and DRG 421-422
Candida infection of the skin – ICD 112.3 and DRG 283-284

Chronic osteomyelitis of the foot – ICD 730.17 and DRG 238
Diabetic diarrhea – ICD 558.9 and DRG 182-184
Impotence secondary to atherosclerosis – ICD 607.84 and DRG 352
Invasive otitis externa – ICD 380.1 and DRG 73-74
Necrobiosis lipoidica diabetes – ICD 709.3 and DRG 283-284
Moniliasis vulvovaginitis – ICD 112.1 and DRG 358-359 or 368

III. Other Comorbid Conditions

All remaining hospitalizations for diabetics and non-diabetics were examined, and attributable risk was calculated for the diabetic population. As in the analysis of chronic complications of diabetes, the analysis of excess risk considered number of hospitalizations and additional length of stay.

APPENDIX C

Persons and Person-Months of Medicare Part A, Non-HMO Enrollment by Age at End of Prior Year, Ethnicity and Gender, Texas, 1995

	Hispanic and Native American				African American				White and Other				Sub-Total				Total	
	Male		Female		Male		Female		Male		Female		Male		Female			
Age	Persons	Months	Persons	Months	Persons	Months	Persons	Months	Persons	Months	Persons	Months	Persons	Months	Persons	Months	Persons	Months
65	1,530	17,554	1,403	16,246	4,038	45,534	5,265	59,040	45,262	518,899	51,417	592,006	50,830	581,987	58,085	667,292	108,915	1,249,279
66	2,698	31,126	2,889	33,603	4,292	48,419	5,518	62,759	42,937	495,789	49,058	568,798	49,927	575,334	57,463	665,160	107,390	1,240,494
87	2,510	28,971	2,828	33,059	4,078	45,973	5,308	60,354	42,043	486,152	49,009	569,137	48,631	561,096	57,145	662,550	105,778	1,223,646
68	2,367	27,474	2,522	29,484	3,850	43,418	5,213	59,441	40,594	489,396	48,582	564,078	48,811	540,288	56,297	653,003	103,108	1,193,289
89	2,138	24,831	2,403	27,803	3,746	42,298	5,323	60,814	39,185	452,448	48,730	566,258	45,069	519,377	58,456	854,873	101,525	1,174,250
70	1,996	23,136	2,273	26,559	3,635	41,301	4,989	56,849	38,593	445,174	48,355	561,050	44,224	509,611	55,617	644,458	99,841	1,154,069
71	2,024	23,349	2,022	23,434	3,262	36,988	4,652	52,928	36,403	419,698	45,655	530,192	41,689	480,035	52,329	606,554	94,018	1,086,589
72	1,737	20,062	1,809	21,028	3,172	35,668	4,651	52,899	34,863	401,893	44,360	515,148	39,772	457,623	50,820	589,073	90,592	1,046,898
73	1,470	16,948	1,571	18,274	2,894	32,739	4,251	48,619	34,208	394,075	45,428	527,072	38,572	443,782	51,248	593,965	89,820	1,037,727
74	1,300	14,941	1,428	18,571	2,638	29,775	4,024	45,817	30,878	354,265	42,297	490,408	34,818	398,981	47,749	552,796	82,565	951,777
75	978	11,150	1,127	13,119	2,571	28,851	3,964	45,075	27,276	312,880	37,288	431,993	30,825	352,881	42,377	490,187	73,202	843,068
78	841	9,708	919	10,563	2,102	23,430	3,498	39,753	24,999	286,192	36,112	417,994	27,942	319,330	40,529	468,310	88,471	787,640
77	680	7,685	847	9,756	2,030	22,689	3,294	37,377	22,550	257,914	33,985	393,350	25,260	288,288	38,128	440,483	63,386	728,771
78	579	6,665	870	7,798	1,766	19,634	3,128	35,396	20,323	231,740	31,562	364,595	22,668	258,039	35,360	407,789	58,028	665,828
79	482	5,478	625	7,128	1,608	17,899	2,934	33,293	19,283	219,409	31,118	358,856	21,373	242,764	34,877	399,277	56,050	642,081
80	527	5,939	670	7,783	1,622	18,020	3,030	34,268	17,807	201,938	30,730	353,369	19,958	225,897	34,430	395,420	54,386	821,317
81	449	5,141	578	8,687	1,508	16,665	2,764	31,111	15,958	180,087	28,533	327,848	17,915	201,893	31,875	385,646	49,790	567,539
82	364	4,181	480	5,419	1,317	14,695	2,757	31,222	14,220	159,388	26,910	308,565	15,901	178,244	30,147	345,206	46,048	523,450
83	312	3,437	411	4,673	1,075	11,892	2,207	24,877	12,098	135,577	24,201	276,572	13,485	150,906	26,819	308,122	40,304	457,028
84	314	3,564	420	4,768	1,032	11,422	2,343	26,290	10,509	117,194	22,315	254,296	11,855	132,180	25,078	285,354	36,933	417,534
85	247	2,702	323	3,681	933	10,305	1,964	21,959	8,787	97,472	20,148	228,551	9,967	110,479	22,435	254,191	32,402	364,870
86	212	2,374	266	3,052	788	8,584	1,618	18,214	7,851	86,330	18,162	205,159	8,851	97,288	20,046	226,425	28,897	323,713
87	175	1,946	239	2,717	728	7,937	1,700	19,045	8,514	71,364	16,065	180,824	7,417	81,247	18,004	202,586	25,421	283,833
88	141	1,542	192	2,224	585	8,233	1,278	14,124	5,104	55,550	13,441	150,623	5,830	63,325	14,911	166,971	20,741	230,296
89	119	1,293	194	2,184	548	8,005	1,280	14,082	4,242	45,830	12,048	134,132	4,909	53,128	13,522	150,398	18,431	203,526
90	81	887	136	1,535	394	4,262	1,049	11,703	3,274	35,111	9,695	107,474	3,749	40,260	10,880	120,712	14,629	160,972
91	82	891	92	1,002	288	3,169	876	9,747	2,631	28,145	8,329	91,799	3,001	32,205	9,297	102,548	12,298	134,753
92	57	621	95	1,062	285	3,043	757	8,331	2,066	21,968	6,858	74,779	2,408	25,632	7,708	84,172	10,116	109,804
93	50	518	62	694	209	2,229	572	6,422	1,383	14,561	5,234	56,471	1,642	17,308	5,868	63,587	7,510	80,895
94	41	422	58	639	221	2,347	564	6,102	1,116	11,711	4,318	46,251	1,378	14,480	4,940	52,992	6,318	67,472
95	19	190	26	288	111	1,144	387	4,270	753	7,889	2,952	31,520	883	9,223	3,365	36,078	4,248	45,301
96	4	44	33	335	97	1,044	294	3,210	557	5,817	2,403	25,576	858	8,905	2,730	29,121	3,388	36,026
97	9	88	13	148	83	913	276	2,935	382	3,944	1,764	18,517	474	4,945	2,053	21,598	2,527	26,543
98+	15	131	35	353	443	5,021	948	10,536	1,188	12,797	4,502	47,236	1,646	17,949	5,485	58,125	7,131	78,074
Total	28,548	304,787	29,859	343,885	57,949	649,544	92,674	1,048,862	815,837	7,038,597	901,538	10,370,495	700,334	7,992,908	1,023,871	11,783,022	1,724,205	19,755,930

APPENDIX D
Short Stay, Non-Specialized Hospital Discharges and Total Days of Stay Billed to Medicare by Age at End of Prior Year, Ethnicity and Gender, Texas, 1995

Diechargee

Age	Hlepanic/ Native Americen		Africen American		White/Other		Subtotal		Total
	Male	Female	Mele	Female	Mele	Femele	Mele	Female	
65	430	417	966	1,307	8,783	9,611	10,179	11,335	21,514
68	692	688	1,050	1,383	8,950	9,817	10,692	11,686	22,378
87	614	709	1,093	1,487	9,286	10,298	10,973	12,492	23,465
68	887	628	1,012	1,501	9,500	10,592	11,199	12,721	23,920
69	613	684	1,058	1,358	9,885	10,892	11,358	12,934	24,290
70	621	719	1,130	1,528	9,862	11,945	11,813	14,192	25,805
71	593	637	899	1,515	10,086	11,645	11,578	13,797	25,375
72	511	612	940	1,483	10,064	11,667	11,515	13,762	25,277
73	494	518	834	1,375	10,228	12,792	11,554	14,683	28,237
74	512	544	865	1,273	9,742	12,704	11,119	14,521	25,640
75	327	411	900	1,348	9,430	11,597	10,657	13,356	24,013
78	367	365	827	1,229	8,900	11,924	10,094	13,518	23,612
77	245	322	831	1,285	8,323	11,447	9,399	13,054	22,453
78	246	281	726	1,283	7,960	11,278	8,932	12,802	21,734
79	260	256	658	1,169	7,969	11,493	8,887	12,918	21,805
80	278	324	710	1,173	7,454	11,863	8,442	13,360	21,802
81	244	283	728	1,180	6,969	11,396	7,941	12,859	20,800
82	187	203	689	1,110	6,878	11,399	7,514	12,712	20,226
83	170	193	526	989	8,059	10,458	8,755	11,640	18,395
84	127	212	553	1,085	5,207	9,633	5,887	10,930	18,817
85	136	164	486	929	4,521	9,257	5,143	10,350	15,493
86	126	131	528	790	4,182	8,566	4,838	9,487	14,323
87	124	134	416	820	3,521	7,839	4,061	8,793	12,854
88	108	98	352	631	2,934	6,669	3,392	7,398	10,790
89	101	125	309	718	2,458	5,975	2,868	8,818	9,688
90	53	78	229	571	1,946	5,007	2,228	5,656	7,884
91	53	59	187	468	1,884	4,243	1,924	4,768	6,692
92	38	61	180	498	1,270	3,544	1,488	4,103	5,591
93	28	45	145	302	802	2,646	975	2,993	3,968
94	39	32	115	336	648	2,098	802	2,466	3,268
95	13	32	62	197	450	1,471	525	1,700	2,225
96	4	18	88	184	330	1,102	400	1,284	1,684
97	8	4	35	143	215	780	258	927	1,185
98+	9	20	71	357	362	1,538	442	1,913	2,355
Total	9,036	9,983	20,156	32,963	196,436	284,982	225,628	327,928	553,556

Deys of Stay

Age	Hlepenic/ Netive American		African Americen		White/Other		Subtotal		Total
	Male	Female	Male	Femele	Male	Femele	Mele	Female	
65	2,976	2,748	7,507	9,381	55,978	58,735	86,481	70,884	137,325
68	4,963	4,620	7,482	9,508	55,720	59,200	68,185	73,328	141,491
87	4,507	4,735	7,712	10,473	57,914	64,398	70,133	79,608	149,739
68	5,187	4,321	7,974	10,887	59,538	87,392	72,879	82,400	155,079
69	4,259	4,791	8,237	9,507	61,617	89,545	74,113	83,843	157,956
70	4,381	4,991	8,581	10,841	83,305	75,679	78,267	91,511	187,778
71	4,628	4,439	6,429	11,298	64,830	74,579	75,887	90,314	166,201
72	3,737	4,539	8,925	10,771	85,783	77,298	78,445	92,808	169,053
73	3,464	3,576	6,528	10,191	85,714	86,529	75,706	100,296	178,002
74	3,722	3,719	6,389	9,411	62,921	83,992	73,032	97,122	170,154
75	2,537	2,994	6,618	10,153	83,591	75,317	72,746	88,464	161,210
78	2,753	2,736	8,019	9,235	59,801	80,415	68,573	92,386	160,959
77	1,827	2,221	8,507	9,418	56,096	77,822	64,430	89,461	153,891
78	1,705	1,856	5,830	9,170	53,857	78,360	81,192	87,386	148,578
79	1,822	1,908	4,725	9,200	53,834	78,239	60,381	89,347	149,728
80	2,082	2,170	5,364	8,751	49,933	80,577	57,379	91,498	148,877
81	1,722	2,032	5,538	9,062	46,808	78,098	54,066	87,192	141,258
82	1,226	1,490	4,899	8,168	43,995	77,290	50,120	88,948	137,068
83	1,440	1,489	3,981	7,357	40,955	70,294	48,376	79,140	125,518
84	1,009	1,527	4,229	7,844	34,733	64,877	39,971	74,248	114,219
85	978	1,131	3,531	8,890	30,184	63,063	34,893	71,084	105,777
86	938	905	3,799	5,789	28,456	57,980	33,193	64,674	97,867
87	928	1,088	3,372	6,111	24,559	51,949	28,859	59,148	88,007
88	817	792	2,624	4,794	19,348	44,761	22,787	50,347	73,134
89	762	848	2,096	5,894	18,373	39,469	19,231	46,011	65,242
90	401	582	1,604	4,092	12,792	33,408	14,797	38,082	52,879
91	345	441	1,284	3,329	11,668	28,183	13,297	31,933	45,230
92	245	473	1,302	3,603	8,496	23,687	10,043	27,763	37,806
93	220	327	1,106	2,196	5,540	17,286	6,866	19,809	26,675
94	310	289	860	2,473	4,232	13,908	5,402	16,670	22,072
95	115	234	490	1,278	3,091	9,817	3,698	11,329	15,025
96	35	144	393	1,246	2,208	7,064	2,836	8,454	11,090
97	72	44	283	943	1,499	4,968	1,834	5,955	7,789
98+	92	168	498	2,452	2,164	10,032	2,754	12,652	15,406
Total	66,185	70,368	150,494	241,312	1,287,531	1,880,191	1,504,210	2,191,871	3,696,081

APPENDIX E

Average Length of Stay (ALOS) and Total Cost for Short Stay, Non-Specialized Hospital Discharges Billed to Medicare by Age at End of Prior Year, Ethnicity and Gender, Texas, 1995

	Average Length of Stay (ALOS)									Total Coet									
	Hispanic/ Native American		African American		White/Other		Subtotal		Total	Hiepanic/ Native American		African American		White/Other		Subtotal		Total
Age	Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female	
65	6.92	6.59	7.77	7.16	8.37	6.11	6.53	6.25	6.38	3,417,813	3,310,975	8,119,876	10,188,315	75,644,148	67,300,841	87,181,637	80,800,131	167,981,768
68	7.17	6.73	7.13	6.87	6.23	6.16	6.38	6.27	6.32	5,730,585	5,344,889	6,154,263	10,378,219	75,510,758	67,666,513	89,395,606	83,389,621	172,765,227
87	7.34	6.68	7.06	7.04	6.25	6.25	6.39	6.37	6.38	5,104,732	5,004,490	6,688,638	11,522,412	77,066,736	72,550,467	90,860,106	89,077,369	179,937,475
68	7.52	6.68	7.88	7.12	6.27	6.36	6.49	8.48	6.48	5,846,136	4,562,783	8,521,570	10,782,892	76,180,907	75,594,453	90,350,613	90,940,128	181,290,741
89	6.95	7.00	7.79	7.00	8.36	6.36	8.53	6.48	6.50	4,567,733	4,938,084	6,611,902	9,919,932	79,199,347	78,723,317	92,378,982	91,581,333	183,960,315
70	7.05	6.94	7.59	7.09	6.42	6.34	6.57	6.45	6.50	4,824,112	5,298,444	8,967,842	10,848,136	77,838,825	81,961,440	91,630,779	98,108,020	189,738,799
71	7.80	6.97	7.15	7.46	6.43	6.40	6.55	6.55	6.55	5,032,859	4,597,537	8,954,393	11,477,187	79,475,919	78,251,139	91,462,971	94,325,863	185,788,834
72	7.31	7.42	7.37	7.26	6.54	6.83	6.84	6.73	6.69	4,293,136	4,891,719	7,284,837	10,914,686	78,132,205	80,332,056	89,710,176	96,138,461	185,848,639
73	7.01	8.93	7.83	7.41	6.43	6.78	6.55	6.83	6.71	3,736,955	3,568,938	6,812,818	9,961,107	78,452,469	90,711,956	88,802,242	104,242,001	193,044,243
74	7.27	6.84	7.39	7.39	6.46	6.61	8.57	8.69	6.64	3,962,493	3,892,213	8,103,684	9,068,211	74,528,738	86,674,422	84,594,893	99,634,846	184,229,739
75	7.76	7.28	7.35	7.53	6.74	6.49	6.83	8.62	6.71	2,509,362	2,804,638	8,668,812	9,935,603	72,507,429	77,424,877	61,685,603	90,165,116	171,850,721
76	7.50	7.50	7.28	7.51	6.72	8.74	6.79	6.63	6.82	2,807,813	2,606,584	6,255,240	8,894,447	87,218,749	81,201,435	76,279,802	92,702,466	188,982,268
77	7.46	8.90	7.83	7.33	8.74	6.80	6.65	6.65	8.65	1,850,399	2,181,411	5,959,325	6,520,139	60,359,750	78,028,435	68,169,474	88,729,985	156,899,459
78	6.93	7.11	7.75	7.26	6.77	6.77	6.65	8.83	6.84	1,963,130	1,898,567	5,286,914	8,337,779	57,319,907	74,377,969	64,569,951	84,614,315	149,184,266
79	7.01	7.45	7.18	7.87	8.76	6.81	6.79	6.92	6.87	1,901,734	1,778,056	4,784,704	8,307,717	55,750,612	74,065,960	62,417,050	84,151,733	146,568,783
80	7.49	8.70	7.55	7.46	8.70	6.79	6.80	6.65	6.83	1,918,975	2,203,160	4,805,814	7,661,974	51,058,189	75,551,280	57,782,978	85,418,414	143,199,392
81	7.06	7.16	7.60	7.88	6.72	6.68	6.81	8.78	6.79	1,841,111	1,845,143	5,053,851	8,096,008	46,771,821	71,136,798	53,466,763	61,077,949	134,544,732
82	7.34	7.34	7.32	7.36	6.59	6.78	8.87	6.84	6.78	1,207,397	1,361,283	4,548,361	6,989,367	43,409,347	70,978,019	49,165,125	79,326,669	128,493,794
83	8.47	7.72	7.57	7.44	8.78	6.72	6.87	8.80	6.82	1,181,008	1,299,361	3,597,157	6,699,329	39,290,942	64,225,218	44,069,107	72,223,906	118,293,013
84	7.94	7.20	7.65	7.23	6.67	8.73	8.79	8.79	8.79	880,008	1,310,524	3,759,736	6,798,540	32,711,306	58,133,727	37,351,050	66,242,891	103,593,941
65	7.19	6.90	7.27	7.42	6.88	6.61	8.75	6.87	6.83	843,250	1,057,988	3,257,981	6,161,791	28,741,557	54,684,799	32,842,788	61,904,576	94,747,366
86	7.44	6.91	7.20	7.33	6.80	6.77	6.86	6.82	8.83	943,121	787,800	3,354,743	4,834,889	25,782,938	50,394,584	30,060,802	56,017,073	86,077,875
87	7.48	8.12	6.11	7.45	8.98	8.63	7.11	6.73	6.65	753,365	853,784	2,938,003	5,017,634	21,633,528	45,141,871	25,324,896	51,013,289	78,338,185
88	7.71	8.08	7.45	7.60	6.59	8.71	8.72	6.81	6.78	704,184	590,045	2,467,765	4,159,466	17,566,216	38,398,042	20,738,165	43,147,553	63,885,738
89	7.54	6.76	6.76	7.93	6.66	8.61	8.71	8.75	8.74	686,549	794,005	1,949,144	4,662,353	14,253,119	33,694,537	16,888,812	39,150,895	56,039,707
90	7.57	7.46	7.00	7.17	6.57	8.87	6.64	8.73	6.71	320,302	480,535	1,392,373	3,477,439	11,430,632	27,820,500	13,143,307	31,778,474	44,921,781
91	8.51	7.47	6.87	7.14	6.93	8.64	6.91	6.70	6.78	304,191	369,985	1,020,505	2,911,356	9,826,093	23,537,964	10,950,789	26,819,305	37,770,094
92	6.45	7.75	7.23	7.23	8.69	8.68	6.75	6.77	6.76	227,032	385,838	929,577	2,953,417	7,272,408	19,803,500	8,429,017	23,142,755	31,571,772
93	7.86	7.27	7.83	7.27	6.91	6.53	7.04	6.62	8.72	208,895	237,862	921,414	1,789,287	4,773,359	14,496,720	5,903,668	16,523,889	22,427,537
94	7.95	9.03	7.48	7.36	6.53	8.83	8.74	8.78	8.75	274,392	195,569	755,750	1,980,630	3,553,847	11,837,863	4,583,969	14,014,082	18,598,071
95	8.65	7.31	7.90	8.49	8.87	8.87	7.04	8.66	8.75	68,784	188,718	519,469	1,176,584	2,529,924	8,101,129	3,118,177	9,464,431	12,562,608
96	8.75	6.00	5.95	7.80	6.89	8.41	8.59	6.58	6.59	37,153	94,183	364,856	1,018,066	1,791,508	5,914,882	2,193,517	7,026,931	9,220,448
97	9.00	11.00	7.51	6.59	6.97	8.37	7.11	8.42	6.57	46,196	23,576	209,428	849,580	1,253,918	4,139,519	1,509,540	5,012,677	6,522,217
98+	10.22	8.40	7.01	8.87	5.98	8.53	8.23	8.61	8.54	62,511	128,068	443,136	2,156,560	1,684,625	8,092,114	2,390,272	10,378,742	12,767,014
Total	**7.32**	**7.06**	**7.47**	**7.32**	**6.55**	**6.60**	**8.67**	**6.66**	**6.66**	**69,659,218**	**70,684,877**	**149,243,701**	**228,450,652**	**1,450,499,772**	**1,848,948,144**	**1,569,402,689**	**2,148,283,673**	**3,817,688,562**

APPENDIX F
Cost per Hospital Stay and Cost Per Month of Medicare Non-HMO Enrollment by Age at End of Prior Year, Ethnicity and Gender, Texas, 1995

	Cost Per Hospital Stay									Cost Per Month of Enrollment								
	Hispanic/ Native American		African American		White/Other		Subtotal		Total	Hispanic/ Native American		African American		White/Other		Subtotal		Total
Age	Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female	
65	7,948	7,940	8,405	7,795	8,613	7,002	8,565	7,128	7,808	195	204	178	173	146	114	150	121	134
66	8,281	7,791	7,766	7,504	8,437	7,036	8,361	7,136	7,721	184	159	168	165	152	119	155	125	139
67	8,314	7,059	7,949	7,749	8,317	7,046	8,280	7,131	7,668	176	151	189	191	159	127	162	134	147
68	8,221	7,266	8,421	7,184	8,019	7,137	8,068	7,149	7,579	206	155	196	181	162	134	167	139	152
69	7,451	7,219	8,140	7,305	8,178	7,044	8,135	7,081	7,574	185	178	204	163	175	135	178	140	157
70	7,768	7,369	7,936	7,100	7,893	6,862	7,890	6,913	7,353	209	199	217	191	175	146	180	152	164
71	8,487	7,217	7,736	7,576	7,880	6,720	7,900	6,837	7,322	216	196	188	217	189	148	191	156	171
72	8,401	7,993	7,750	7,360	7,764	6,885	7,791	6,986	7,352	214	233	204	206	194	156	196	163	178
73	7,565	6,917	7,929	7,244	7,672	7,091	7,686	7,100	7,358	220	195	202	205	199	172	200	176	186
74	7,739	7,155	7,056	7,123	7,650	6,823	7,608	6,861	7,185	265	235	205	198	210	177	212	180	194
75	7,674	6,824	7,410	7,371	7,689	6,676	7,665	6,751	7,157	225	214	231	220	232	179	231	184	204
76	7,651	7,141	7,564	7,237	7,552	6,810	7,557	6,858	7,157	289	247	267	224	235	194	239	198	215
77	7,553	6,775	7,171	6,630	7,252	6,816	7,253	6,797	6,988	241	224	263	228	234	198	236	201	215
78	7,980	7,274	7,282	6,602	7,201	6,595	7,229	6,609	6,864	295	243	269	236	247	204	250	207	224
79	7,314	6,946	7,241	7,107	6,996	6,444	7,023	6,514	6,722	347	249	266	250	254	206	257	211	228
80	6,903	6,800	6,769	6,532	6,850	6,369	6,845	6,393	6,568	323	283	267	224	253	214	256	216	230
81	6,726	6,520	6,942	6,861	6,711	6,242	6,733	6,305	6,468	319	276	303	260	260	217	265	222	237
82	7,230	6,706	6,799	6,297	6,500	6,227	6,543	6,240	6,353	290	251	310	224	272	230	276	230	245
83	6,947	6,732	6,839	6,774	6,485	6,141	6,524	6,205	6,322	344	278	302	269	290	232	292	236	254
84	6,929	6,182	6,799	6,266	6,282	6,035	6,345	6,061	6,160	247	275	329	259	279	229	283	232	248
85	6,200	6,451	6,704	6,633	6,357	5,907	6,386	5,981	6,115	312	287	316	281	295	239	297	244	260
86	7,485	6,014	6,354	6,120	6,160	5,883	6,216	5,905	6,010	397	258	391	265	298	246	309	247	266
87	6,076	6,372	7,063	6,119	6,144	5,759	6,236	5,802	5,939	387	314	370	263	303	250	312	252	269
88	6,643	6,021	7,011	6,592	5,987	5,758	6,114	5,832	5,921	457	265	396	294	316	255	327	258	277
89	6,798	6,352	6,308	6,494	5,799	5,639	5,889	5,742	5,786	531	364	325	331	311	251	318	260	275
90	6,043	6,161	6,080	6,090	5,874	5,556	5,899	5,619	5,698	361	313	327	297	326	259	326	263	279
91	5,739	6,271	5,457	6,248	5,716	5,547	5,692	5,625	5,644	341	369	322	299	342	256	340	262	280
92	5,975	6,325	5,164	5,931	5,726	5,588	5,665	5,640	5,647	366	363	305	355	331	265	329	275	288
93	7,461	5,286	6,355	5,925	5,952	5,479	6,055	5,521	5,652	403	343	413	279	328	257	341	260	277
94	7,036	6,112	6,572	5,895	5,484	5,642	5,716	5,683	5,691	650	306	322	325	303	256	317	264	276
95	5,291	5,835	8,379	5,973	5,622	5,507	5,939	5,567	5,655	362	648	454	276	321	257	338	262	278
96	9,288	5,232	5,528	6,208	5,429	5,367	5,484	5,473	5,475	844	281	349	317	308	231	318	241	256
97	5,775	5,895	5,984	5,941	5,832	5,307	5,851	5,407	5,504	525	161	229	289	318	224	305	232	246
98+	6,946	6,403	6,241	6,041	5,206	5,268	5,408	5,424	5,421	477	363	88	205	147	171	133	179	168
Total	$7,709	$7,101	$7,404	$6,931	$7,384	$6,488	$7,399	$6,551	$6,897	$229	$206	$230	$218	$206	$178	$209	$183	$193

APPENDIX G
Estimated Elderly Population and Medicare Part A, Non-HMO Enrollment as Percent of Population by Age, Ethnicity and Gender, Texas, 1995

	Estimated Elderly Population *									Enrollment as Percent of Population								
	Hispanic/ Native American		African American		White/Other		Subtotal		Total	Hispanic/ Native American		African American		White/Other		Subtotal		Total
Age	Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female	
65	10,378	12,919	5,399	7,054	42,947	47,690	58,724	67,663	126,387	14.7%	10.9%	74.8%	74.6%	105.4%	107.8%	86.6%	85.8%	86.2%
66	9,664	12,334	5,278	6,548	41,350	46,687	56,292	65,569	121,861	27.9%	23.4%	81.3%	84.2%	103.8%	105.1%	88.7%	87.6%	88.1%
67	9,438	11,882	4,929	6,375	40,911	46,684	55,278	64,941	120,219	26.6%	23.8%	82.7%	83.3%	102.8%	105.0%	88.0%	88.0%	88.0%
68	8,572	11,031	4,301	5,697	37,468	45,027	50,341	61,755	112,096	27.6%	22.9%	89.5%	91.5%	108.3%	107.9%	93.0%	91.2%	92.0%
69	8,152	10,952	4,101	5,609	36,600	45,321	48,853	61,882	110,735	26.2%	21.9%	91.3%	94.9%	107.1%	107.5%	92.3%	91.2%	91.7%
70	8,212	10,665	3,804	5,446	36,459	45,352	48,475	61,463	109,938	24.3%	21.3%	95.6%	91.6%	105.9%	106.6%	91.2%	90.5%	90.8%
71	7,914	9,658	3,499	4,926	34,740	43,156	46,153	57,740	103,893	25.6%	20.9%	93.2%	94.4%	104.8%	105.8%	90.3%	90.6%	90.5%
72	7,544	9,212	3,335	4,704	33,153	41,838	44,032	55,754	99,786	23.0%	19.6%	95.1%	98.9%	105.2%	106.0%	90.3%	91.2%	90.8%
73	6,626	8,317	3,018	4,455	31,757	41,110	41,401	53,882	95,283	22.2%	18.9%	95.9%	95.4%	107.7%	110.5%	93.2%	95.1%	94.3%
74	6,175	8,159	3,069	4,306	30,735	40,348	39,979	52,813	92,792	21.1%	17.5%	86.0%	93.5%	100.5%	104.8%	87.1%	90.4%	89.0%
75	5,040	6,989	2,875	4,067	25,885	35,274	33,800	46,330	80,130	19.4%	16.1%	89.4%	97.5%	105.4%	105.7%	91.2%	91.5%	91.4%
76	4,522	6,040	2,457	3,751	24,683	34,496	31,662	44,287	75,949	18.6%	15.2%	85.6%	93.3%	101.3%	104.7%	88.3%	91.5%	90.2%
77	3,971	5,566	2,326	3,583	22,915	32,951	29,212	42,100	71,312	17.1%	15.2%	87.3%	91.9%	98.4%	103.1%	86.5%	90.6%	88.9%
78	3,727	5,212	2,143	3,631	21,437	31,960	27,307	40,803	68,110	15.5%	12.9%	82.4%	86.1%	94.8%	98.8%	83.0%	86.7%	85.2%
79	3,528	5,108	2,024	3,448	19,889	30,634	25,441	39,190	64,631	13.7%	12.2%	79.4%	85.1%	97.0%	101.6%	84.0%	88.5%	86.7%
80	3,236	4,926	1,558	3,031	17,196	29,072	21,990	37,029	59,019	16.3%	13.6%	104.1%	100.0%	103.6%	105.7%	90.8%	93.0%	92.1%
81	2,953	4,632	1,564	2,797	15,027	26,578	19,544	34,007	53,551	15.2%	12.5%	96.4%	98.8%	106.2%	107.4%	91.7%	93.7%	93.0%
82	2,730	4,362	1,462	2,685	13,493	24,658	17,685	31,705	49,390	13.3%	11.0%	90.1%	102.7%	105.4%	109.1%	89.9%	95.1%	93.2%
83	2,298	3,798	1,178	2,223	11,660	22,439	15,136	28,460	43,596	13.6%	10.8%	91.3%	99.3%	103.8%	107.9%	89.1%	94.2%	92.4%
84	2,186	3,545	1,148	2,355	9,757	20,663	13,091	26,563	39,654	14.4%	11.8%	89.9%	99.5%	107.7%	108.0%	90.6%	94.4%	93.1%
85+	9,991	18,546	5,859	13,484	41,220	114,044	57,070	146,074	203,144	12.5%	9.5%	97.5%	100.6%	111.2%	110.4%	92.5%	96.7%	95.5%
Total	126,857	173,853	65,327	100,175	589,282	845,982	781,466	1,120,010	1,901,476	20.9%	17.1%	88.7%	92.5%	104.5%	106.6%	89.6%	91.4%	90.7%

* Bureau of the Census, U.S. Dept. of Commerce: State population estimates by age, sex, race and Hispanic origin, 7/1/95.

Appendix H
Medicare Non-HMO Recipients Hospitalized by Gender, Ethnicity, and Age at End of Prior Year, Texas, 1995

MALE

AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	403	4978	579	227	6	252	2	6447
66	12	5665	643	86	17	387	6	6816
67	17	5765	672	84	19	387	4	6948
68	6	5980	596	72	20	399	3	7076
69	13	5959	635	71	29	341	2	7050
70	16	6123	659	68	0	342	2	7240
71	14	6189	549	79	2	341	4	7203
72	13	6137	546	63	25	316	1	7101
73	18	6223	481	77	29	289	3	7120
74	16	5919	468	72	20	278	5	6778
75	10	5562	524	62	20	199	1	6378
76	21	5317	456	70	21	208	2	6095
77	9	5014	489	65	15	155		5747
78	16	4753	416	58	12	152	1	5408
79	34	4640	380	72	14	142	2	5284
80	35	4397	424	87	9	148	1	5101
81	29	4130	415	65	9	132	2	4782
82	59	3893	378	72	13	103	1	4519
83	59	3493	304	61	6	90	4	4017
84	53	2992	322	55	11	82	1	3516
85	69	2653	290	49	4	82		3147
86	77	2385	285	48	3	62	2	2862
87	40	2046	229	45	2	74		2436
88	33	1711	189	26	2	58		2019
89	18	1440	189	22	1	47		1717
90	19	1142	124	25	3	29		1342
91	9	978	107	19		35		1148
92	11	781	102	10	1	26		931
93	8	483	81	6	1	16	2	597
94	9	380	69	7	2	20		487
95	7	276	36	7		11		337
96		207	40	1	1	3		252
97	1	136	21	2	1	3	1	165
98	4	228	50	6	1	6		295
Total	1158	117975	11748	1839	374	5215	52	138361
%	.8	85.3	8.5	1.3	.3	3.8	.0	100.0

FEMALE

AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	376	5431	766	299	6	245	2	7125
66	17	6021	868	116	23	409	6	7460
67	15	6386	856	90	24	436	4	7811
68	15	6568	862	93	21	381	6	7946
69	14	6817	820	98	15	404	1	8169
70	10	7293	897	99	32	406	3	8740
71	17	7070	874	93	18	372	3	8447
72	24	7238	897	98	25	351	6	8639
73	16	7854	814	96	23	296	2	9101
74	29	7715	783	80	24	295	4	8930
75	27	7066	817	82	14	216	7	8229
76	31	7189	726	80	21	213	3	8263
77	30	6905	728	81	19	191	2	7956
78	31	6818	705	84	16	150	2	7806
79	33	6935	690	73	20	154	1	7906
80	109	7092	706	76	21	172	3	8179
81	108	6808	687	83	13	150		7849
82	116	6753	651	88	5	132		7745
83	107	6300	591	81	13	121	1	7214
84	126	5880	646	59	11	126	1	6849
85	174	5554	553	46	5	102	2	6436
86	158	5173	461	39	9	77	3	5920
87	77	4808	503	49	9	80	1	5527
88	53	4068	379	30	5	59	2	4596
89	50	3754	428	35	4	67	1	4339
90	44	3106	333	25		49	1	3558
91	33	2670	276	18	3	33		3033
92	49	2248	278	20	6	32		2633
93	29	1680	183	9		25		1926
94	24	1385	194	7	3	18		1631
95	9	944	122	7	1	11		1094
96	9	742	105	8	1	12		877
97	13	514	88			3		618
98	19	1031	216	17	2	14		1299
Total	1992	173816	19503	2259	412	5802	67	203851
%	1.0	85.3	9.6	1.1	.2	2.8	.0	100.0

Appendix I
Persons with Any Evidence of ICD 250 Among Hospitalized Non-HMO Medicare Recipients by Gender, Ethnicity and Age at End of Prior Year, Texas, 1995

MALE

AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	63	1115	175	57		107	1	1518
66	4	1122	175	30	2	138	2	1473
67	5	1197	184	29	1	140		1556
68	1	1236	170	25	5	154		1591
69	3	1247	173	26	4	128	1	1582
70	5	1239	164	20	12	145	1	1586
71	5	1340	157	27	8	129		1666
72	5	1308	158	25	5	126	1	1628
73	6	1230	123	23	5	112	1	1500
74	3	1175	115	19	4	96	1	1413
75	5	1094	123	20	6	69		1317
76	7	1042	105	26	4	67		1251
77	3	927	105	14	3	41		1093
78	3	861	90	18	2	46		1020
79	6	860	75	27	8	39		1015
80	11	755	104	28	2	49		949
81	4	690	83	16	1	38		832
82	12	628	77	17	2	30		766
83	13	557	60	17		18	1	666
84	6	437	57	16		22	1	539
85	7	404	52	7	2	19		491
86	10	316	52	15		16	2	411
87	7	285	36	12		8		348
88	4	214	29	6		6		259
89	3	161	29	6		10		209
90	1	129	17	5		5		157
91	3	125	14	2		3		147
92	2	81	10	1		3		97
93	1	53	4			4		62
94	2	42	7		2	1		54
95		17	3					20
96		21	5			1		27
97		8	1			1		10
98		18	4			1		23
Total	210	21934	2736	534	78	1772	12	27276
%	.8	80.4	10.0	2.0	.3	6.5	.0	100.0

FEMALE

AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	76	1268	336	117	2	125	1	1925
66	3	1360	359	45	8	201	4	1980
67	4	1398	359	30	6	209	2	2008
68	7	1395	384	35	4	195	3	2023
69		1476	302	41	3	211		2033
70	1	1559	356	34	5	208	1	2164
71	5	1557	373	37	6	170		2148
72	3	1518	341	42	4	167	1	2076
73	4	1629	324	45	6	124		2132
74	8	1630	311	28	6	138	2	2123
75	11	1448	288	39	6	101	2	1895
76	13	1407	279	26	5	63		1793
77	7	1300	261	34	5	73	1	1681
78	6	1260	222	31	2	66		1587
79	11	1253	212	27	1	56		1560
80	27	1192	216	23	9	66	1	1534
81	20	1187	214	31		57		1509
82	21	1130	196	28	1	42		1418
83	12	1047	145	22	2	41		1269
84	22	880	168	13		41		1124
85	26	832	139	14	1	33	1	1046
86	30	728	110	16	2	18		904
87	13	654	128	11	1	20		827
88	8	515	77	6	1	13		620
89	7	457	81	14		12		571
90	8	354	53	7		12		434
91	5	291	38	3		2		339
92	8	224	57	2		8		299
93	2	186	35			7		230
94		141	22	1		3		167
95		100	11	1		3		115
96	1	64	23	2	1			91
97	3	45	15					63
98	1	66	24	2		3		96
Total	373	31551	6459	807	87	2488	19	41784
%	.9	75.5	15.5	1.9	.2	6.0	.0	100.0

Appendix J
Persons with Any Evidence of ICDs 250, 251.0 or 251.2 Among Hospitalized Non-HMO Medicare Recipients by Gender, Ethnicity and Age at End of Prior Year, Texas, 1995

MALE

AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	63	1120	177	57		107	1	1525
66	4	1126	175	30	2	138	2	1477
67	5	1203	184	29	1	141		1563
68	1	1245	170	25	5	154		1600
69	4	1250	177	26	4	128	1	1590
70	5	1243	164	20	12	145	1	1590
71	5	1345	159	27	8	130		1674
72	5	1312	158	25	5	128	1	1634
73	6	1238	124	24	5	114	1	1512
74	3	1183	115	19	4	99	1	1424
75	5	1095	125	20	6	71		1322
76	7	1048	106	26	4	69		1260
77	3	930	106	14	3	41		1097
78	3	869	90	18	2	46		1028
79	6	864	76	27	8	39		1020
80	11	759	104	28	2	49		953
81	4	693	86	16	1	38		838
82	12	629	79	17	2	30		769
83	13	559	64	17		18	1	672
84	6	440	61	16		23	1	547
85	7	409	52	7	2	20		497
86	12	323	52	15		16	2	420
87	7	286	37	12		8		350
88	4	215	31	6		6		262
89	3	164	30	6		10		213
90	1	131	19	5		5		161
91	3	126	15	2		3		149
92	2	82	10	1		3		98
93	1	53	4			4		62
94	2	43	7		2	1		55
95		17	3					20
96		21	5			1		27
97		10	1			1		12
98		19	5			1		25
Total	213	22050	2771	535	78	1787	12	27446
%	.8	80.3	10.1	1.9	.3	6.5	.0	100.0

FEMALE

AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	77	1275	337	117	2	125	1	1934
66	3	1366	362	45	8	201	4	1989
67	4	1408	360	30	6	209	2	2019
68	7	1402	386	35	4	195	3	2032
69		1484	302	41	3	211		2041
70	1	1566	356	35	5	208	1	2172
71	5	1570	373	37	6	172		2163
72	3	1521	345	42	4	167	1	2083
73	4	1635	326	45	6	124		2140
74	8	1643	313	28	6	138	2	2138
75	11	1451	290	39	6	101	2	1900
76	13	1419	282	26	5	64		1809
77	7	1305	263	34	5	73	1	1688
78	6	1271	226	31	2	66		1602
79	11	1260	214	28	1	56		1570
80	27	1199	218	23	10	66	1	1544
81	22	1195	216	31		57		1521
82	21	1134	196	28	1	42		1422
83	12	1059	147	22	2	42		1284
84	22	887	169	13		41		1132
85	27	841	140	14	1	34	1	1058
86	30	731	111	16	2	18		908
87	14	664	131	11	1	20		841
88	9	520	77	6	1	13		626
89	7	467	82	14		12		582
90	8	358	56	7		13		442
91	5	294	38	3		2		342
92	8	231	58	2		8		307
93	2	190	35			7		234
94		143	22	1		3		169
95		101	11	1		4		117
96	1	65	23	2	1			92
97	3	45	15					63
98	1	68	25	2		3		99
Total	379	31768	6505	809	88	2495	19	42063
%	.9	75.5	15.5	1.9	.2	5.9	.0	100.0

Appendix K
Persons with Any Evidence of ICDs 250, 251.0, 251.2, 362.0 or 962.3 Among Hospitalized Non-HMO Medicare Recipients by Gender, Ethnicity and Age at End of Prior Year, Texas, 1995

	MALE								FEMALE							
AGE	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total	Unknown	White	Black	Other	Asian	Hispanic	Native American	Total
65	63	1120	177	57		107	1	1525	77	1275	337	117	2	125	1	1934
66	4	1126	175	30	2	138	2	1477	3	1366	362	45	8	201	4	1989
67	5	1203	184	29	1	141		1563	4	1409	361	30	6	209	2	2021
68	1	1245	170	25	5	154		1600	7	1402	386	35	4	195	3	2032
69	4	1250	177	26	4	128	1	1590		1484	302	41	3	211		2041
70	5	1243	164	20	12	145	1	1590	1	1566	356	35	5	208	1	2172
71	5	1345	159	27	8	130		1674	5	1570	373	37	6	172		2163
72	5	1312	158	25	5	128	1	1634	3	1521	345	42	4	167	1	2083
73	6	1238	124	24	5	114	1	1512	4	1635	326	45	6	124		2140
74	3	1183	115	19	4	99	1	1424	8	1643	313	28	6	138	2	2138
75	5	1095	125	20	6	71		1322	11	1451	290	39	6	101	2	1900
76	7	1048	106	26	4	69		1260	13	1419	282	26	5	64		1809
77	3	930	106	14	3	41		1097	7	1306	263	34	5	73	1	1689
78	3	869	90	18	2	46		1028	6	1271	226	31	2	66		1602
79	6	864	76	27	8	39		1020	11	1260	214	28	1	56		1570
80	11	760	104	28	2	49		954	27	1199	218	23	10	66	1	1544
81	4	693	86	16	1	38		838	22	1195	216	31		57		1521
82	12	629	79	17	2	30		769	21	1134	196	28	1	42		1422
83	13	559	64	17		18	1	672	12	1059	147	22	2	42		1284
84	6	440	61	16		23	1	547	22	887	169	13		41		1132
85	7	409	52	7	2	20		497	27	841	140	14	1	34	1	1058
86	12	323	52	15		16	2	420	30	731	111	16	2	18		908
87	7	286	37	12		8		350	14	664	132	11	1	20		842
88	4	215	31	6		6		262	9	520	77	6	1	13		626
89	3	164	30	6		10		213	7	467	82	14		12		582
90	1	131	19	5		5		161	8	359	56	7		13		443
91	3	126	15	2		3		149	5	295	38	3		2		343
92	2	82	10	1		3		98	8	231	58	2		8		307
93	1	53	4			4		62	2	190	35			7		234
94	2	43	7		2	1		55		143	22	1		3		169
95		17	3					20		101	11	1		4		117
96		21	5			1		27	1	65	23	2	1			92
97		10	1			1		12	3	45	15					63
98		19	5			1		25	1	68	25	2		3		99
Total	213	22051	2771	535	78	1787	12	27447	379	31772	6507	809	88	2495	19	42069
%	.8	80.3	10.1	1.9	.3	6.5	.0	100.0	.9	75.5	15.5	1.9	.2	5.9	.0	100.0

Appendix L
Diabetes Prevalence and Confidence Intervals from 1987-94 National Health Interview Surveys
Applied to Non-HMO Medicare Enrollment with Pooled Error
By Ethnicity, Gender and Age Groups, Texas, 1995

Age	White/Other/Unknown		African American		Mexican American		Sub-Total		Total
Group	Male	Female	Male	Female	Male	Female	Male	Female	Population
Persons Sampled									
65-74	4,333	5,496	495	767	176	240	5,004	6,503	11,507
75-84	2,036	3,169	252	397	62	106	2,350	3,672	6,022
85+	408	912	39	105	8	26	455	1,043	1,498
Total	6,777	9,577	786	1,269	246	372	7,809	11,218	19,027
Persons with Diabetes									
65-74	397	495	71	148	28	43	496	686	1,182
75-84	200	281	36	75	8	13	244	369	613
85+	26	62	5	15	2	2	33	79	112
Total	623	838	112	238	38	58	773	1,134	1,907
Proportion with Diabetes (Totals weighted for Person-Months of enrollment)									
65-74	0.0916	0.0901	0.1434	0.1930	0.1591	0.1792	0.0988	0.1027	0.1009
75-84	0.0982	0.0887	0.1429	0.1889	0.1290	0.1226	0.1026	0.0980	0.0997
85+	0.0637	0.0680	0.1282	0.1429	0.2500	0.0769	0.0751	0.0753	0.0752
Total	0.0916	0.0866	0.1418	0.1845	0.1570	0.1605	0.0982	0.0975	0.0978
Expected Persons with Diabetes Based on White Female Age Distribution									
65-74	503.56	495.00	788.32	1,060.51	874.36	984.70			
75-84	311.30	281.00	452.71	598.68	408.90	388.65			
85+	58.12	62.00	116.92	130.29	228.00	70.15			
Total	872.97	838.00	1,357.95	1,789.47	1,511.27	1,443.50			
Standardized Prevalence Ratio									
Total	104.17	100.00	162.05	213.54	180.34	172.26			
Person-Months of Enrollment									
65-74	4,437,789	5,484,145	402,111	559,520	228,192	246,059	5,068,092	6,289,724	11,357,816
75-84	2,102,319	3,487,438	185,197	338,662	62,926	77,694	2,350,442	3,903,794	6,254,236
85+	498,489	1,398,912	62,236	150,680	13,649	19,912	574,374	1,569,504	2,143,878
Total	7,038,597	10,370,495	649,544	1,048,862	304,767	343,665	7,992,908	11,763,022	19,755,930
Standard Error for Prevalence (Totals Based on Pooled Variances)									
65-74	0.0044	0.0039	0.0158	0.0142	0.0276	0.0248	0.0042	0.0037	0.0028
75-84	0.0066	0.0050	0.0220	0.0196	0.0426	0.0319	0.0063	0.0049	0.0038
85+	0.0121	0.0083	0.0535	0.0341	0.1531	0.0523	0.0123	0.0081	0.0068
Total	0.0035	0.0029	0.0124	0.0109	0.0231	0.0190	0.0034	0.0028	0.0021
95% Confidence Interval (+/- Prevalence)									
65-74	0.86%	0.76%	3.09%	2.79%	5.40%	4.85%	0.82%	0.73%	0.55%
75-84	1.29%	0.99%	4.32%	3.85%	8.34%	6.24%	1.23%	0.96%	0.75%
85+	2.37%	1.63%	10.49%	6.69%	30.01%	10.24%	2.40%	1.60%	1.33%
Total	0.69%	0.56%	2.44%	2.13%	4.54%	3.72%	0.66%	0.55%	0.42%
Relative Confidence Interval (+/- Percent of Prevalence)									
65-74	9.38%	8.40%	21.53%	14.47%	33.97%	27.08%	8.35%	7.14%	5.43%
75-84	13.16%	11.16%	30.24%	20.38%	64.67%	50.92%	11.95%	9.77%	7.56%
85+	37.19%	24.03%	81.84%	46.85%	120.02%	133.16%	31.97%	21.20%	17.67%
Total	7.49%	6.50%	17.20%	11.56%	28.90%	23.16%	6.71%	5.60%	4.30%

APPENDIX M. Basic Estimate for Attributable Hospital Stays, Days of Stay and Costs, Point Estimates with Lower and Upper Bounds for 95% Confidence Interval by Type of Complication, Ethnicity, Gender and Age at End of Prior Year, Texas, 1995

		LOWER BOUND *			POINT ESTIMATE *			UPPER BOUND *		
	Age	Hospital Stays	Days of Stay	Cost	Hospital Stays	Days of Stay	Cost	Hospital Stays	Days of Stay	Cost
DIRECTLY ATTRIBUTABLE										
Hispanic Males	65-74	96	460	331,226	96	460	331,228	96	460	331,228
	75-84	25	110	87,897	25	110	87,897	25	110	87,697
	85+	4	13	15,927	4	13	15,927	4	13	15,927
	Subtotal	125	583	435,052	125	583	435,052	125	583	435,052
Hispanic Females	65-74	142	649	505,826	142	649	505,826	142	849	505,828
	75-84	52	210	166,735	52	210	166,735	52	210	188,735
	85+	9	51	27,628	9	51	27,628	9	51	27,628
	Subtotal	203	910	720,191	203	910	720,191	203	910	720,191
Black Males	65-74	143	687	526,402	143	687	526,402	143	687	526,402
	75-84	83	437	306,924	83	437	306,924	83	437	306,924
	85+	29	135	97,365	29	135	97,365	29	135	97,365
	Subtotal	255	1,259	930,691	255	1,259	930,891	255	1,259	930,691
Black Females	65-74	290	1,334	1,042,370	290	1,334	1,042,370	290	1,334	1,042,370
	75-84	202	1,095	879,935	202	1,095	679,935	202	1,095	679,935
	85+	79	468	292,064	79	468	292,064	79	468	292,064
	Subtotal	571	2,897	2,014,369	571	2,897	2,014,369	571	2,897	2,014,369
White/Other Males	65-74	557	2,510	1,643,374	557	2,510	1,843,374	557	2,510	1,843,374
	75-84	406	1,976	1,350,970	406	1,976	1,350,970	406	1,976	1,350,970
	85+	134	677	449,384	134	677	449,364	134	677	449,384
	Subtotal	1,097	5,183	3,643,728	1,097	5,163	3,643,728	1,097	5,163	3,843,728
White/Other Females	65-74	920	4,280	3,048,837	920	4,280	3,048,837	920	4,280	3,048,837
	75-84	811	4,235	2,752,026	811	4,235	2,752,026	811	4,235	2,752,026
	85+	290	1,537	917,666	290	1,537	917,666	290	1,537	917,666
	Subtotal	2,021	10,052	6,716,529	2,021	10,052	6,718,529	2,021	10,052	6,718,529
Subtotal Males	65-74	796	3,857	2,701,004	796	3,657	2,701,004	796	3,657	2,701,004
	75-84	514	2,523	1,745,791	514	2,523	1,745,791	514	2,523	1,745,791
	85+	167	825	562,676	167	825	562,676	167	825	562,676
	Subtotal	1,477	7,005	5,009,471	1,477	7,005	5,009,471	1,477	7,005	5,009,471
Subtotal Females	65-74	1,352	6,263	4,597,035	1,352	6,263	4,597,035	1,352	6,283	4,597,035
	75-84	1,065	5,540	3,618,696	1,065	5,540	3,818,696	1,065	5,540	3,618,696
	85+	378	2,056	1,237,358	378	2,056	1,237,358	376	2,056	1,237,358
	Subtotal	2,795	13,859	9,453,089	2,795	13,859	9,453,089	2,795	13,859	9,453,089
Total	65-74	2,148	9,920	7,298,039	2,148	9,920	7,298,039	2,148	9,920	7,298,039
	75-84	1,579	8,063	5,364,487	1,579	8,063	5,364,487	1,579	8,063	5,364,487
	85+	545	2,881	1,800,034	545	2,881	1,800,034	545	2,881	1,800,034
	Total	4,272	20,864	14,462,560	4,272	20,864	14,462,560	4,272	20,864	14,462,560
NEUROLOGICAL COMPLICATIONS										
Hispanic Males	65-74	70	538	386,485	80	592	436,883	89	640	481,010
	75-84	23	144	99,119	32	205	147,826	39	255	187,857
	85+	-35	-258	-204,236	-4	-33	-28,450	9	63	45,992
	Subtotal	95	687	488,719	111	783	570,902	125	889	644,463
Hispanic Females	65-74	121	763	564,715	128	800	597,075	133	833	625,723
	75-84	39	273	201,308	46	315	236,152	51	352	266,273
	85+	1	21	6,646	6	56	31,000	10	84	50,348
	Subtotal	183	1,064	780,411	174	1,132	835,734	184	1,194	886,242
Black Males	65-74	77	485	416,749	93	591	504,477	109	690	585,892
	75-84	23	216	101,870	41	341	198,968	58	453	286,580
	85+	-27	-195	-129,348	-2	-34	-13,102	17	92	77,710
	Subtotal	102	698	534,359	131	885	681,841	158	1,061	820,942
Black Females	65-74	260	1,871	1,480,170	278	1,981	1,570,480	294	2,084	1,654,587
	75-84	97	633	488,216	128	834	641,452	155	1,018	780,598
	85+	-29	-102	-126,092	11	122	83,160	44	312	224,518
	Subtotal	358	2,587	1,988,635	400	2,852	2,201,169	440	3,103	2,402,636
White/Other Males	65-74	787	4,539	3,891,235	814	4,682	4,021,106	840	4,821	4,148,418
	75-84	441	2,829	2,263,850	486	3,075	2,471,496	529	3,314	2,673,122
	85+	83	560	444,605	114	743	587,059	144	917	722,213
	Subtotal	1,342	6,093	6,746,744	1,396	8,391	7,002,488	1,450	8,685	7,254,232
White/Other Females	65-74	976	5,712	4,810,135	1,001	5,844	4,925,732	1,025	5,973	5,039,322
	75-84	755	4,889	3,608,510	809	5,195	3,863,617	861	5,495	4,113,087
	85+	158	1,166	805,046	214	1,510	1,074,400	270	1,841	1,334,142
	Subtotal	1,904	11,854	9,310,141	1,974	12,248	9,636,561	2,043	12,637	9,958,812
Subtotal Males	65-74	966	5,769	4,866,326	997	5,940	5,019,841	1,028	6,107	5,170,437
	75-84	514	3,388	2,615,910	563	3,662	2,844,850	610	3,928	3,067,468
	85+	74	495	402,322	112	722	576,939	148	937	742,429
	Subtotal	1,590	9,847	6,055,320	1,651	10,194	8,349,219	1,712	10,535	8,636,685
Subtotal Females	65-74	1,394	6,807	7,060,866	1,423	8,765	7,198,354	1,452	8,921	7,333,509
	75-84	934	8,131	4,537,827	994	6,478	4,823,822	1,053	6,817	5,103,654
	85+	173	1,342	907,482	239	1,731	1,214,053	302	2,105	1,509,886
	Subtotal	2,503	16,074	12,518,665	2,583	16,527	12,892,392	2,661	16,974	13,261,454
Total	65-74	2,376	14,487	12,006,620	2,419	14,699	12,210,878	2,461	14,927	12,412,544
	75-84	1,481	9,700	7,305,239	1,558	10,140	7,670,208	1,633	10,573	8,026,956
	85+	276	2,006	1,440,861	351	2,452	1,790,975	424	2,886	2,130,841
	Total	4,134	26,150	20,766,190	4,234	26,718	21,240,554	4,333	27,282	21,710,348

APPENDIX M. Continued

CARDIOVASCULAR - ARTERY COMPLICATIONS

Hispanic Males	65-74	29	280	249,011	33	307	261,955	36	332	310,600
	75-84	5	11	-6,808	7	30	13,986	9	45	31,075
	85+	-11	-88	-73,310	-1	-3	-7,589	4	34	20,243
	Subtotal	35	304	249,848	40	343	293,614	45	379	332,789
Hispanic Females	65-74	49	337	315,990	52	353	334,443	55	387	350,779
	75-84	14	69	86,179	17	90	101,001	20	109	113,814
	85+	0	1	2,590	2	15	13,999	3	25	23,062
	Subtotal	84	410	410,836	89	441	438,167	73	468	463,118
Black Males	65-74	22	115	93,101	28	168	149,810	34	214	202,053
	75-84	-8	-107	-88,421	0	-45	-32,360	8	11	18,224
	85+	-7	-72	-55,568	4	3	8,741	12	62	55,414
	Subtotal	20	28	31,461	31	119	120,100	42	204	203,701
Black Females	65-74	45	318	338,685	53	364	384,981	61	409	428,096
	75-84	18	207	84,685	33	315	168,056	46	413	281,922
	85+	-20	-94	-137,251	2	82	14,455	21	232	143,600
	Subtotal	57	526	377,759	79	678	518,405	99	823	651,727
White/Other Males	65-74	158	991	474,627	174	1,107	669,900	190	1,221	661,327
	75-84	78	518	50,761	97	658	240,683	115	794	425,098
	85+	20	217	171,576	31	298	240,635	41	370	306,154
	Subtotal	271	1,842	884,183	297	2,032	1,159,937	323	2,219	1,431,378
White/Other Females	65-74	298	1,918	1,395,583	310	1,987	1,486,638	323	2,057	1,576,505
	75-84	153	1,027	802,616	172	1,142	915,513	191	1,254	1,025,718
	85+	29	242	161,224	52	383	280,670	73	519	396,247
	Subtotal	489	3,229	2,430,311	517	3,397	2,604,035	545	3,563	2,775,541
Subtotal Males	65-74	217	1,451	842,670	235	1,580	1,101,465	252	1,706	1,253,856
	75-84	84	502	14,721	103	643	222,309	124	802	405,600
	65+	23	217	166,925	34	296	239,766	49	407	332,706
	Subtotal	341	2,299	1,216,956	370	2,510	1,511,360	398	2,717	1,601,324
Subtotat Females	65-74	409	2,661	2,108,910	424	2,744	2,211,321	438	2,825	2,311,995
	75-84	212	1,527	1,178,803	234	1,664	1,312,041	256	1,796	1,442,408
	65+	39	393	237,441	65	568	386,868	91	738	531,057
	Subtotal	663	4,582	3,566,589	696	4,784	3,770,954	729	4,983	3,972,767
Total	65-74	634	4,163	3,018,757	657	4,310	3,232,815	680	4,455	3,444,158
	75-84	309	2,128	1,320,202	339	2,329	1,545,944	369	2,526	1,767,838
	85+	72	884	468,247	102	883	638,898	130	1,077	804,554
	Total	1,022	7,008	4,947,748	1,066	7,297	5,292,036	1,109	7,583	5,633,006

CARDIOVASCULAR - HEART COMPLICATIONS

Hispanic Males	65-74	289	1,461	1,483,950	316	1,620	1,619,629	340	1,742	1,738,427
	75-84	63	491	352,759	104	614	470,603	122	715	567,619
	65+	-79	-434	-377,504	-5	-26	-15,398	26	148	137,947
	Subtotal	381	2,026	1,895,474	421	2,241	2,100,877	457	2,433	2,284,732
Hispanic Females	65-74	386	2,260	1,657,613	409	2,373	1,965,999	429	2,474	2,061,952
	75-84	160	813	757,767	175	891	827,205	169	959	887,231
	85+	1	-15	107	17	85	80,667	30	164	144,665
	Subtotal	555	3,093	2,652,750	587	3,265	2,807,549	617	3,422	2,948,675
Black Males	65-74	269	1,522	1,673,760	304	1,708	1,860,987	338	1,660	2,034,725
	75-84	94	508	442,626	134	731	639,069	170	931	816,321
	85+	-60	-354	-269,492	-3	-26	-6,150	41	231	199,573
	Subtotal	368	2,045	2,161,639	431	2,384	2,473,915	490	2,704	2,768,255
Black Females	65-74	767	4,408	3,971,565	629	4,628	4,174,034	667	4,832	4,362,577
	75-84	297	1,749	1,418,717	363	2,129	1,733,627	422	2,475	2,021,779
	85+	-1	-35	14,956	72	396	368,213	134	764	669,403
	Subtotal	1,147	6,480	5,712,889	1,237	6,992	6,151,325	1,323	7,477	6,566,934
White/Other Males	65-74	2,497	13,293	12,512,308	2,597	13,748	12,985,080	2,696	14,195	13,446,539
	75-84	1,430	8,344	6,879,776	1,564	9,002	7,478,515	1,693	9,640	8,059,894
	85+	182	929	868,713	273	1,414	1,279,852	360	1,875	1,669,924
	Subtotal	4,209	23,027	20,713,265	4,386	23,682	21,528,478	4,561	24,724	22,330,939
White/Other Females	65-74	3,572	19,997	16,657,272	3,647	20,345	16,967,387	3,721	20,686	17,311,731
	75-84	2,811	15,247	12,110,652	2,748	15,929	12,699,188	2,883	16,595	13,274,720
	85+	665	3,876	3,076,046	815	4,675	3,727,796	960	5,446	4,356,289
	Subtotal	6,902	39,340	32,079,245	7,089	40,269	32,689,382	7,274	41,186	33,689,131
Subtotal Males	65-74	3,101	16,580	15,938,200	3,211	17,065	16,459,574	3,318	17,580	16,971,036
	75-84	1,658	9,652	7,953,048	1,798	10,351	8,589,416	1,934	11,032	9,208,212
	85+	159	813	793,136	267	1,389	1,278,942	368	1,935	1,739,355
	Subtotal	5,028	27,566	25,193,185	5,220	28,506	26,084,905	5,410	29,431	26,963,178
Subtotal Females	65-74	4,621	27,138	22,913,719	4,907	27,542	23,296,608	4,992	27,940	23,673,000
	75-84	3,148	18,351	14,723,146	3,296	19,107	15,374,327	3,443	19,847	16,011,475
	65+	736	4,292	3,473,673	901	5,181	4,198,338	1,060	6,038	4,697,424
	Subtotal	6,722	49,796	41,192,729	8,929	50,842	42,103,900	9,135	51,875	43,003,698
Total	65-74	7,973	43,956	39,080,993	8,110	44,592	39,712,230	6,245	45,220	40,335,456
	75-84	4,895	28,461	23,091,699	5,099	29,463	23,992,759	5,300	30,468	24,676,461
	85+	972	5,516	4,609,565	1,168	6,570	5,476,932	1,358	7,592	6,316,911
	Total	13,870	77,953	66,931,960	14,152	79,354	68,199,725	14,431	60,742	69,455,277

APPENDIX M. Continued

CARDIOVASCULAR - VEIN COMPLICATIONS

Hispanic Males	65-74	0	6	-3,562	2	20	3,835	3	31	10,312
	75-84	2	14	13,221	3	19	16,357	4	24	16,934
	85+	-4	-21	-15,257	-1	-6	-4,126	0	1	588
	Subtotal	2	21	8,471	4	35	17,162	6	48	24,942
Hispanic Females	65-74	15	117	62,490	16	125	67,762	17	132	72,430
	75-84	-2	-5	-7,340	-1	0	-3,420	0	4	-31
	65+	1	8	4,352	2	13	7,600	2	16	10,161
	Subtotal	14	123	81,314	16	134	68,918	16	143	75,659
Black Males	65-74	2	15	15,522	5	29	24,552	7	43	32,932
	75-84	-1	-25	-7,529	1	-11	591	3	1	7,917
	65+	-3	-25	-16,520	-1	-9	-6,732	1	3	914
	Subtotal	1	-15	4,153	4	8	17,613	7	29	30,697
Black Females	65-74	8	70	42,695	12	94	56,964	15	118	70,254
	75-84	-3	9	-2,243	1	39	15,222	6	66	31,061
	85+	-4	-4	3,252	0	23	18,168	3	45	30,885
	Subtotal	6	106	62,301	12	149	87,226	18	190	110,853
White/Other Males	65-74	58	404	168,739	84	441	191,744	70	477	214,297
	75-84	4	48	13,144	11	91	39,466	18	133	65,023
	65+	6	62	21,601	9	60	31,284	11	97	40,471
	Subtotal	74	553	228,192	63	611	263,237	93	667	297,734
White/Other Females	65-74	93	640	382,620	100	684	408,143	107	726	433,224
	75-84	39	255	162,758	49	321	199,430	59	387	235,291
	85+	19	121	75,752	28	160	107,419	37	237	137,956
	Subtotal	157	1,055	644,551	171	1,146	695,447	185	1,236	745,692
Subtotal Males	65-74	63	451	195,030	70	491	220,483	76	531	245,452
	75-84	7	52	27,684	14	98	55,469	21	143	82,292
	85+	4	45	10,916	7	87	23,109	10	88	34,665
	Subtotal	61	590	259,285	91	652	297,661	101	714	335,459
Subtotal Females	65-74	121	661	509,116	129	909	538,052	136	958	566,497
	75-84	39	266	173,552	50	361	213,624	61	432	252,631
	65+	19	146	97,656	29	212	132,325	38	274	165,779
	Subtotal	163	1,325	796,654	199	1,425	855,292	214	1,524	911,025
Total	65-74	188	1,338	720,266	198	1,402	758,717	208	1,464	796,659
	75-84	50	372	219,910	64	457	268,312	77	540	315,689
	85+	26	214	120,001	38	280	155,464	45	343	169,666
	Total	271	1,959	1,084,509	289	2,076	1,152,331	307	2,192	1,219,499

RENAL COMPLICATIONS

Hispanic Males	65-74	72	428	387,191	79	475	426,606	65	516	461,121
	75-84	13	129	76,233	20	170	108,764	25	204	133,655
	85+	-33	-147	-137,611	-2	51	6,164	11	134	69,982
	Subtotal	88	640	498,102	100	716	558,796	110	785	613,123
Hispanic Females	65-74	147	925	763,445	152	952	805,982	156	976	825,934
	75-84	52	333	239,343	58	366	263,698	60	394	284,751
	65+	11	106	51,218	18	145	72,654	20	176	69,683
	Subtotal	210	1,366	1,078,521	219	1,422	1,116,922	227	1,474	1,155,607
Black Males	65-74	65	360	330,165	73	423	379,688	61	483	426,035
	75-84	22	222	164,318	37	316	233,116	50	401	295,196
	65+	-29	-165	-116,151	1	37	20,503	24	195	127,257
	Subtotal	66	609	513,114	108	755	619,657	126	693	720,534
Black Females	65-74	219	1,459	1,265,274	227	1,511	1,323,262	234	1,559	1,358,641
	75-84	146	1,098	730,095	168	1,224	824,128	185	1,337	909,515
	65+	26	189	149,384	62	422	307,192	92	621	441,741
	Subtotal	409	2,658	2,246,872	438	3,041	2,376,399	465	3,216	2,503,079
White/Other Males	65-74	338	2,237	1,664,369	350	2,302	1,920,524	361	2,366	1,975,573
	75-84	269	1,652	1,214,137	294	1,793	1,321,425	319	1,930	1,425,603
	65+	70	406	293,147	98	575	413,950	126	738	528,582
	Subtotal	687	4,351	3,420,986	719	4,529	3,558,611	750	4,705	3,694,480
White/Other Females	65-74	626	4,958	4,000,664	841	5,037	4,063,298	655	5,114	4,124,642
	75-84	776	4,739	3,493,440	611	4,929	3,629,297	844	5,114	3,762,153
	85+	220	1,467	913,299	274	1,775	1,130,194	325	2,071	1,339,349
	Subtotal	1,626	11,166	6,415,622	1,875	11,441	6,816,476	1,923	11,713	6,614,768
Subtotal Males	65-74	496	3,190	2,712,237	510	3,275	2,763,660	524	3,358	2,653,724
	75-84	328	2,158	1,570,342	357	2,322	1,693,981	385	2,482	1,614,205
	65+	68	504	329,007	105	723	484,049	139	931	630,986
	Subtotal	908	5,941	4,683,433	945	6,159	4,850,414	982	6,373	5,014,876
Subtotal Females	65-74	1,207	7,460	8,153,266	1,224	7,552	6,226,087	1,241	7,842	6,297,653
	75-84	1,009	6,390	4,632,399	1,046	6,605	4,787,928	1,082	8,816	4,940,106
	65+	298	2,054	1,303,114	358	2,409	1,551,287	417	2,751	1,790,767
	Subtotal	2,499	15,603	12,029,645	2,554	16,120	12,260,549	2,608	18,433	12,488,571
Total	65-74	1,712	10,702	8,906,754	1,735	10,826	9,008,351	1,757	10,949	9,108,656
	75-84	1,358	8,657	6,284,602	1,403	8,927	6,482,553	1,449	9,192	6,677,130
	65+	393	2,717	1,744,359	463	3,132	2,035,265	531	3,535	2,317,658
	Total	3,432	21,693	16,625,376	3,499	22,275	17,109,165	3,564	22,654	17,390,261

APPENDIX M. Continued

ENDOCRINE/METABOLIC COMPLICATIONS

Hispanic Males	85-74	7	35	25,967	7	39	28,004	7	43	29,787
	75-84	0	0	2,114	1	1	3,045	1	2	3,810
	85+	-3	-5	-10,602	1	10	3,633	2	17	9,661
	Subtotal	8	48	33,464	9	53	36,751	10	57	39,694
Hispanic Females	65-74	4	21	21,299	5	22	21,939	5	24	22,506
	75-84	0	-2	-1,679	0	0	366	1	2	2,134
	85+	0	-2	-1,159	0	-1	-440	0	0	131
	Subtotal	4	17	18,250	4	20	20,304	5	23	22,178
Black Males	85-74	1	-10	4,726	2	-7	8,274	2	-4	7,710
	75-84	0	-1	22	1	3	2,498	2	5	4,732
	85+	0	-7	-2,428	1	-1	2,292	2	4	5,977
	Subtotal	2	-11	6,970	3	-6	10,580	4	0	13,984
Black Females	65-74	12	54	48,424	12	58	49,791	13	59	51,064
	75-84	10	52	45,588	11	57	49,060	11	62	52,212
	85+	2	27	4,311	4	37	12,452	5	46	19,394
	Subtotal	24	138	101,468	26	146	107,072	27	153	112,384
White/Other Males	65-74	20	65	77,187	20	87	79,070	21	89	80,935
	75-84	7	48	27,735	7	51	30,161	8	53	32,517
	85+	2	1	3,769	3	4	8,079	3	7	8,272
	Subtotal	29	135	110,180	30	139	113,669	30	143	117,103
White/Other Females	65-74	40	172	173,314	41	174	174,773	41	175	178,207
	75-84	24	144	102,097	25	148	104,965	26	152	107,770
	85+	7	4	27,080	8	10	30,478	9	15	33,754
	Subtotal	72	321	303,400	73	328	307,318	74	332	311,188
Subtotal Males	65-74	29	122	113,277	30	125	115,754	30	129	118,183
	75-84	9	52	34,171	9	56	37,228	10	59	40,200
	85+	4	14	13,115	5	19	18,847	6	24	20,383
	Subtotal	43	190	182,824	44	197	187,284	45	203	171,874
Subtotal Females	65-74	58	258	246,948	58	259	248,757	58	261	250,538
	75-84	38	208	155,603	37	213	159,388	38	218	163,088
	85+	12	45	42,902	13	52	47,947	14	59	52,814
	Subtotal	105	508	444,834	107	515	450,126	106	523	455,351
Total	65-74	67	380	361,308	88	384	364,301	88	388	367,256
	75-84	45	262	191,796	47	289	196,641	48	275	201,403
	85+	17	62	58,559	18	71	64,789	20	80	70,837
	Total	149	702	610,400	150	712	617,433	152	721	624,399

OPHTHALMIC COMPLICATIONS

Hispanic Males	65-74	1	2	3,795	1	2	3,795	1	2	3,795
	75-84	0	0	0	0	0	0	0	0	0
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	1	2	3,795	1	2	3,795	1	2	3,795
Hispanic Females	65-74	2	7	5,266	2	7	5,266	2	7	5,266
	75-84	1	2	2,615	1	3	2,865	1	3	3,081
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	3	9	7,823	3	9	7,981	3	10	8,127
Black Males	65-74	1	1	4,988	1	2	5,584	1	2	8,139
	75-84	-1	-2	-1,880	-1	-1	-1,370	0	-1	-909
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	1	0	3,508	1	1	4,255	1	1	4,960
Black Females	65-74	4	12	14,060	4	12	14,262	4	12	14,432
	75-84	3	10	6,722	3	10	6,722	3	10	6,722
	85+	-1	-2	-1,736	0	-1	-1,088	0	-1	-538
	Subtotal	6	20	19,209	6	21	19,560	6	21	19,892
White/Other Males	65-74	4	18	11,335	4	18	12,283	5	19	13,212
	75-84	2	23	1,748	3	24	3,369	3	25	4,943
	85+	1	1	570	1	2	691	1	2	1,195
	Subtotal	8	42	15,175	8	44	16,879	9	46	16,556
White/Other Females	65-74	16	82	55,149	17	63	58,548	17	64	57,923
	75-84	4	28	11,356	4	30	12,886	5	31	14,382
	85+	2	14	6,139	3	15	7,192	3	18	8,207
	Subtotal	23	106	74,035	24	108	78,306	24	109	78,549
Subtotal Males	65-74	6	21	20,614	7	22	21,678	7	23	22,721
	75-84	2	21	220	2	23	1,897	3	24	3,526
	85+	1	1	413	1	1	744	1	2	1,058
	Subtotal	9	45	22,729	10	48	24,563	10	48	28,370
Subtotal Females	65-74	22	80	72,909	22	81	74,333	22	82	75,734
	75-84	7	40	19,608	8	41	21,149	8	42	22,657
	85+	2	13	5,035	2	14	6,202	3	15	7,328
	Subtotal	31	133	96,728	32	135	101,064	33	137	103,373
Total	65-74	28	102	94,302	29	103	96,068	29	105	97,812
	75-84	9	62	20,918	10	64	23,153	11	66	25,351
	85+	3	14	5,797	3	15	6,947	4	17	8,064
	Total	41	179	122,656	42	182	125,621	43	184	128,557

APPENDIX M. Continued

OTHER COMPLICATIONS										
Hispanic Males	65-74	6	35	29,024	7	38	31,528	6	40	33,716
	75-84	4	11	12,543	4	12	13,106	4	13	13,573
	85+	-5	-22	-20,593	0	1	706	2	11	9,726
	Subtotal	11	50	44,876	12	55	48,683	13	56	52,269
Hispanic Females	65-74	9	37	30,894	11	42	37,102	12	46	42,599
	75-84	4	42	23,345	5	45	26,615	6	48	29,614
	65+	0	1	679	1	4	4,263	2	7	7,111
	Subtotal	14	62	57,369	17	69	65,495	19	95	72,913
Black Males	65-74	4	9	11,265	4	10	12,768	5	11	14,163
	75-84	0	0	1,666	1	2	3,204	1	4	4,394
	65+	0	-1	-776	0	-1	-374	0	0	-61
	Subtotal	4	9	13,664	5	11	15,651	5	13	17,525
Black Females	65-74	15	79	49,798	18	63	53,207	17	67	56,381
	75-84	-2	-13	-7,353	-1	-7	-2,361	1	-1	2,171
	65+	0	4	3,065	2	10	7,140	3	14	10,615
	Subtotal	15	76	50,426	17	65	56,994	18	92	63,221
White/Other Males	65-74	30	123	107,150	31	130	113,206	33	136	119,143
	75-84	14	61	48,550	16	73	55,723	19	85	64,630
	65+	14	76	51,957	16	63	57,976	18	90	63,691
	Subtotal	59	269	212,381	63	283	223,849	67	296	235,136
White/Other Females	65-74	69	266	245,215	74	303	259,237	76	320	273,016
	75-84	39	177	150,403	45	202	168,900	51	226	186,989
	85+	10	76	42,532	14	93	55,468	16	109	67,943
	Subtotal	123	556	452,501	131	589	477,925	139	621	503,024
Subtotal Males	65-74	41	169	150,431	43	176	158,995	45	182	163,433
	75-84	18	73	61,138	20	85	70,306	23	97	79,221
	85+	14	79	54,651	17	87	61,650	19	95	68,262
	Subtotal	75	330	273,206	79	344	285,307	82	358	297,223
Subtotal Females	65-74	93	400	329,259	98	419	344,627	103	437	359,734
	75-84	41	205	167,793	48	231	187,462	54	256	206,708
	85+	12	86	50,754	16	104	64,840	21	121	78,433
	Subtotal	150	706	560,439	159	741	587,942	166	775	615,101
Total	65-74	137	579	487,679	142	597	503,466	147	615	519,052
	75-84	61	286	235,319	68	314	256,416	74	341	277,153
	65+	26	171	110,987	33	191	126,493	38	210	141,565
	Total	229	1,048	843,579	238	1,084	872,437	247	1,119	901,016
UNRELATED CONDITIONS										
Hispanic Males	65-74	1,038	9,176	9,740,986	1,262	10,638	11,705,132	1,456	12,292	13,424,899
	75-84	306	2,616	2,779,168	458	3,793	3,968,601	583	4,760	4,946,157
	65+	-492	-3,817	-3,358,647	-43	-319	-241,751	147	1,163	1,076,197
	Subtotal	1,405	12,272	13,113,804	1,709	14,565	15,633,582	1,981	16,618	17,669,010
Hispanic Females	65-74	1,669	14,340	15,986,762	1,848	15,533	17,330,837	2,007	16,586	18,520,730
	75-84	522	4,842	4,291,277	635	5,663	5,120,277	732	6,373	5,638,908
	65+	112	938	626,771	182	1,471	1,284,899	237	1,694	1,648,844
	Subtotal	2,378	20,585	21,676,077	2,607	22,181	23,357,769	2,815	23,837	24,691,269
Black Males	65-74	1,062	9,693	9,696,130	1,297	11,539	11,739,062	1,516	13,252	13,633,150
	75-84	373	3,201	2,927,574	624	5,197	4,902,665	651	6,999	6,685,163
	65+	-162	-1,124	-1,384,464	135	1,162	773,878	366	2,948	2,459,971
	Subtotal	1,648	14,697	14,133,220	2,035	17,739	17,286,914	2,401	20,609	20,261,383
Black Females	65-74	2,717	21,987	22,551,338	2,987	24,012	24,795,374	3,236	25,917	26,665,269
	75-84	1,253	11,009	9,847,146	1,588	13,647	12,379,620	1,892	16,043	14,879,620
	65+	121	1,197	940,599	480	4,008	3,402,774	767	6,406	5,502,046
	Subtotal	4,450	36,951	36,154,374	4,949	40,621	39,997,523	5,423	44,491	43,640,577
White/Other Males	65-74	10,358	61,740	94,335,170	11,004	65,962	99,982,072	11,637	90,101	105,517,737
	75-84	5,450	44,750	42,568,037	6,201	50,026	48,367,616	6,929	55,150	53,999,047
	85+	1,174	10,305	6,589,749	1,629	13,498	11,540,033	2,059	16,527	14,339,146
	Subtotal	17,598	141,012	150,699,665	16,841	148,110	159,126,091	19,670	155,096	167,420,705
White/Other Females	65-74	13,242	107,972	110,738,401	13,905	112,263	115,687,674	14,557	116,519	120,511,373
	75-84	9,031	74,916	87,170,400	9,667	80,807	73,109,146	10,685	66,568	76,916,681
	65+	2,710	21,412	16,586,647	3,440	26,582	21,157,759	4,145	31,526	25,563,825
	Subtotal	25,579	206,202	199,235,382	26,802	216,553	207,657,697	28,009	224,798	216,370,267
Subtotal Males	65-74	12,854	104,179	117,202,904	13,566	106,934	123,427,891	14,265	113,598	129,534,122
	75-84	6,490	53,592	51,133,783	7,289	59,263	57,321,850	8,066	64,818	63,339,054
	85+	1,219	10,951	8,921,996	1,759	14,791	12,474,959	2,270	18,430	15,842,214
	Subtotal	21,241	173,441	162,936,956	22,387	161,344	192,165,177	23,515	189,129	201,293,935
Subtotal Females	65-74	17,919	147,256	152,302,323	16,654	152,103	157,822,624	19,377	156,868	163,249,250
	75-84	11,121	93,804	84,016,384	12,026	100,234	90,474,337	12,911	106,525	96,793,124
	65+	3,293	26,514	20,922,527	4,095	32,226	25,983,679	4,869	37,742	30,667,536
	Subtotal	32,624	270,647	261,551,406	34,165	279,905	271,082,295	35,489	289,048	280,494,218
Total	65-74	31,168	254,160	272,699,477	32,208	260,944	280,941,222	33,216	267,622	289,078,361
	75-84	16,136	151,135	139,195,465	19,336	159,673	148,056,684	20,516	168,064	156,766,665
	85+	4,693	40,171	32,309,069	5,654	47,016	38,455,542	6,786	53,681	44,422,104
	Total	54,795	449,124	450,165,015	56,555	461,271	463,375,600	56,297	473,301	476,458,910

APPENDIX M. Continued

TOTAL										
Hispanic Males	65-74	1,608	12,443	12,634,075	1,883	14,391	14,868,594	2,125	16,096	16,825,093
	75-84	461	3,527	3,418,246	654	4,955	4,830,386	812	6,127	5,990,977
	85+	-659	-4,781	-4,182,035	-53	-310	-268,882	204	1,583	1,388,265
	Subtotal	2,150	16,633	16,771,403	2,531	19,376	19,699,215	2,873	21,832	22,319,870
Hispanic Females	65-74	2,545	19,455	20,134,303	2,765	20,856	21,672,234	2,959	22,096	23,033,746
	75-84	842	6,577	5,779,551	987	7,584	6,761,694	1,112	8,454	7,610,709
	85+	135	1,111	918,832	234	1,839	1,522,270	313	2,418	2,001,653
	Subtotal	3,609	27,659	27,465,545	3,899	29,602	29,441,030	4,164	31,377	31,244,577
Black Males	65-74	1,646	12,876	12,774,826	1,952	15,148	15,209,604	2,236	17,257	17,469,200
	75-84	585	4,449	3,847,391	921	6,968	6,253,508	1,224	9,242	8,424,563
	85+	-259	-1,808	-1,877,378	163	1,267	874,421	493	3,669	3,024,121
	Subtotal	2,487	19,319	18,332,978	3,004	23,156	22,161,617	3,491	26,774	25,772,673
Black Females	65-74	4,357	31,568	30,824,418	4,708	34,076	33,464,724	5,034	36,411	35,923,671
	75-84	2,021	15,849	13,289,507	2,494	19,343	16,515,860	2,923	22,516	19,445,557
	85+	173	1,648	1,142,553	710	5,566	4,484,531	1,168	8,906	7,333,929
	Subtotal	7,042	52,639	48,728,303	7,734	57,682	53,532,043	8,391	62,462	58,085,673
White/Other Males	65-74	14,806	105,940	115,285,475	15,616	110,987	121,818,360	16,409	115,935	128,222,555
	75-84	8,101	60,248	54,416,709	9,085	66,769	61,359,423	10,039	73,102	68,100,847
	85+	1,686	13,234	10,895,072	2,307	17,371	14,607,144	2,897	21,297	18,129,012
	Subtotal	25,373	184,489	186,674,501	26,721	193,184	196,637,167	28,049	201,743	206,443,992
White/Other Females	65-74	20,053	145,995	141,507,189	20,856	150,998	147,078,444	21,645	155,914	152,552,979
	75-84	14,245	105,658	90,364,460	15,343	112,937	97,454,967	16,416	120,056	104,388,817
	85+	4,108	29,915	22,613,431	5,137	36,739	28,489,242	6,129	43,319	34,155,378
	Subtotal	39,096	285,882	259,663,716	40,676	296,130	269,879,858	42,237	306,248	279,965,498
Subtotal Males	65-74	18,568	135,591	144,742,893	19,463	141,285	151,957,013	20,341	146,871	159,033,967
	75-84	9,623	72,013	65,157,011	10,672	79,058	72,573,683	11,691	85,908	79,785,571
	85+	1,735	13,945	11,255,159	2,475	18,940	15,731,956	3,178	23,674	19,974,757
	Subtotal	30,793	227,255	227,813,168	32,273	236,957	238,765,361	33,731	246,512	249,552,394
Subtotal Females	65-74	27,395	200,981	196,294,368	28,292	206,637	202,557,800	29,173	212,197	208,714,946
	75-84	17,611	132,483	113,223,811	18,804	140,474	120,972,772	19,972	148,292	128,554,747
	85+	4,962	36,943	28,278,142	6,097	44,555	34,822,895	7,193	51,900	41,138,382
	Subtotal	50,476	373,433	342,214,975	52,219	384,854	353,557,602	53,939	396,131	364,758,648
Total	65-74	46,473	339,787	344,674,215	47,734	347,777	354,126,087	48,978	355,665	363,457,991
	75-84	27,924	209,127	183,229,635	29,503	219,718	193,857,155	31,055	230,129	204,303,532
	85+	7,224	54,438	42,667,459	8,572	63,492	50,551,340	9,881	72,280	58,204,455
	Total	82,214	606,881	576,759,993	84,496	621,834	592,447,481	86,755	636,643	607,983,833

* Subtotals and totals are weighted for representation of demographic groups in count of person-months of enrollment.

APPENDIX N. Adjusted Demographic Estimata for Attributabla Hospital Stays, Days of Stay and Costs, Point Estimataa with Lower and Upper Bounds for 95% Confidanca Intarval by Type of Complication, Ethnicity, Gender and Aga at End of Prior Yaar, Taxaa, 1995

		LOWER BOUND *			POINT ESTIMATE *			UPPER BOUND *		
	Aga	Hospital Stays	Deys of Stay	Cost	Hoapital Stays	Days of Stay	Cost	Hoapital Staya	Days of Stay	Cost
DIRECTLY ATTRIBUTABLE										
Hispanic Males	65-74	96	460	331,226	96	460	331,226	98	460	331,228
	75-84	25	110	87,897	25	110	87,897	25	110	87,897
	85+	4	13	15,927	4	13	15,927	4	13	15,927
	Subtotal	125	583	435,052	125	583	435,052	125	583	435,052
Hispanic Females	65-74	142	649	505,628	142	849	505,828	142	649	505,828
	75-84	52	210	186,735	52	210	186,735	52	210	188,735
	85+	9	51	27,828	9	51	27,828	9	51	27,628
	Subtotal	203	910	720,191	203	910	720,191	203	910	720,191
Black Males	65-74	143	687	526,402	143	687	526,402	143	687	526,402
	75-84	83	437	306,924	83	437	306,924	83	437	306,924
	85+	29	135	97,365	29	135	97,365	29	135	97,365
	Subtotal	255	1,259	930,691	255	1,259	930,891	255	1,259	930,891
Black Females	65-74	290	1,334	1,042,370	290	1,334	1,042,370	290	1,334	1,042,370
	75-84	202	1,095	879,935	202	1,095	879,935	202	1,095	879,935
	85+	79	468	292,064	79	468	292,064	79	468	292,064
	Subtotal	571	2,897	2,014,369	571	2,897	2,014,369	571	2,897	2,014,369
White/Other Males	65-74	557	2,510	1,843,374	557	2,510	1,843,374	557	2,510	1,843,374
	75-84	406	1,976	1,350,970	406	1,976	1,350,970	406	1,978	1,350,970
	85+	134	877	449,384	134	677	449,384	134	877	449,384
	Subtotal	1,097	5,163	3,843,728	1,097	5,163	3,643,728	1,097	5,183	3,643,728
White/Other Females	65-74	920	4,280	3,048,837	920	4,280	3,048,837	920	4,280	3,048,837
	75-84	811	4,235	2,752,026	811	4,235	2,752,026	811	4,235	2,752,026
	85+	290	1,537	917,666	290	1,537	917,666	290	1,537	917,666
	Subtotal	2,021	10,052	6,716,529	2,021	10,052	8,718,529	2,021	10,052	6,718,529
Subtotal Males	65-74	796	3,657	2,701,004	796	3,657	2,701,004	796	3,657	2,701,004
	75-84	514	2,523	1,745,791	514	2,523	1,745,791	514	2,523	1,745,791
	85+	187	825	562,876	187	825	562,678	187	825	562,876
	Subtotal	1,477	7,005	5,009,471	1,477	7,005	5,009,471	1,477	7,005	5,009,471
Subtotal Females	65-74	1,352	6,263	4,597,035	1,352	6,283	4,597,035	1,352	6,263	4,597,035
	75-84	1,065	5,540	3,818,696	1,065	5,540	3,618,698	1,065	5,540	3,618,698
	85+	378	2,056	1,237,356	378	2,056	1,237,358	378	2,056	1,237,358
	Subtotal	2,795	13,859	9,453,069	2,795	13,859	9,453,089	2,795	13,859	9,453,069
Totel	65-74	2,148	9,920	7,298,039	2,148	9,920	7,298,039	2,148	9,920	7,298,039
	75-84	1,579	6,063	5,364,487	1,579	8,063	5,364,487	1,579	8,063	5,364,487
	85+	545	2,881	1,800,034	545	2,881	1,800,034	545	2,881	1,800,034
	Total	4,272	20,864	14,462,560	4,272	20,864	14,462,560	4,272	20,864	14,462,560
NEUROLOGICAL COMPLICATIONS										
Hispanic Males	65-74	70	538	386,485	80	592	436,883	89	640	481,010
	75-84	23	144	99,119	32	205	147,826	39	255	187,857
	85+	-35	-258	-204,236	-4	-33	-28,450	9	63	45,992
	Subtotal	94	683	485,419	110	781	568,619	124	868	643,007
Hispanic Females	65-74	121	783	564,715	128	800	597,075	133	833	625,723
	75-84	39	273	201,308	48	315	236,152	51	352	266,273
	85+	1	21	6,646	6	56	31,000	10	84	50,348
	Subtotal	167	1,086	798,753	177	1,149	849,349	186	1,206	895,843
Black Meles	65-74	77	485	418,749	93	591	504,477	109	890	585,892
	75-84	23	216	101,870	41	341	198,968	58	453	286,580
	85+	-27	-195	-129,348	-2	-34	-13,102	17	92	77,710
	Subtotal	102	898	534,359	131	885	681,841	158	1,061	820,942
Black Females	65-74	260	1,871	1,480,170	278	1,981	1,570,480	294	2,084	1,654,567
	75-84	97	633	488,216	126	834	641,452	155	1,016	780,598
	85+	-29	-102	-126,092	11	122	63,160	44	312	224,518
	Subtotal	358	2,587	1,988,635	400	2,852	2,201,169	440	3,103	2,402,636
White/Other Malea	65-74	787	4,539	3,691,235	814	4,682	4,021,106	840	4,821	4,148,418
	75-84	441	2,829	2,263,850	486	3,075	2,471,496	529	3,314	2,873,122
	85+	63	560	444,605	114	743	587,059	144	917	722,213
	Subtotal	1,341	6,088	8,742,464	1,395	8,386	8,998,569	1,449	8,680	7,250,663
White/Other Females	65-74	978	5,712	4,610,135	1,001	5,844	4,925,732	1,025	5,973	5,039,322
	75-84	755	4,889	3,608,510	809	5,195	3,863,617	861	5,495	4,113,087
	85+	156	1,166	805,046	214	1,510	1,074,400	270	1,841	1,334,142
	Subtotal	1,905	11,857	9,312,240	1,975	12,251	9,638,508	2,044	12,640	9,960,609
Subtotal Males	65-74	938	5,615	4,727,455	972	5,800	4,894,217	1,005	5,982	5,057,567
	75-84	500	3,306	2,547,322	550	3,590	2,785,315	599	3,867	3,018,509
	85+	18	148	134,591	71	475	386,863	122	779	621,022
	Subtotal	1,518	9,441	7,710,788	1,585	9,619	8,031,406	1,651	10,191	8,346,819
Subtotal Females	85-74	1,349	6,367	8,852,834	1,382	8,546	7,007,498	1,415	8,721	7,159,442
	75-84	910	5,987	4,418,888	972	8,349	4,717,859	1,033	6,704	5,010,130
	85+	169	1,314	884,978	235	1,708	1,196,144	300	2,088	1,496,266
	Subtotal	2,398	15,473	12,022,469	2,484	15,965	12,428,613	2,589	18,450	12,829,296
Total	65-74	2,305	14,077	11,661,445	2,352	14,333	11,887,848	2,398	14,586	12,111,103
	75-84	1,443	9,481	7,123,922	1,523	9,941	7,504,561	1,602	10,392	7,878,505
	85+	223	1,895	1,196,674	306	2,196	1,569,911	390	2,681	1,970,374
	Total	3,960	25,162	19,942,260	4,069	25,781	20,458,505	4,177	26,393	20,969,384

APPENDIX N. Continued

CARDIOVASCULAR - ARTERY COMPLICATIONS

Hispanic Males	65-74	29	280	249,011	33	307	281,955	36	332	310,800
	75-84	5	11	-6,808	7	30	13,988	9	45	31,075
	85+	-11	-88	-73,310	-1	-3	-7,589	4	34	20,243
	Subtotal	35	302	248,090	40	342	292,399	45	378	332,014
Hispanic Females	65-74	49	337	315,990	52	353	334,443	55	367	350,779
	75-84	14	69	86,179	17	90	101,001	20	109	113,814
	85+	0	1	2,590	2	15	13,999	3	25	23,062
	Subtotal	66	420	419,899	70	448	444,892	74	474	467,859
Black Males	65-74	22	115	93,101	28	168	149,610	34	214	202,053
	75-84	-8	-107	-88,421	0	-45	-32,360	8	11	18,224
	65+	-7	-72	-55,566	4	3	8,741	12	62	55,414
	Subtotal	20	28	31,481	31	119	120,100	42	204	203,701
Black Females	85-74	45	318	338,685	53	364	384,981	61	409	428,096
	75-84	18	207	84,685	33	315	168,056	48	413	281,922
	85+	-20	-94	-137,251	2	82	14,455	21	232	143,800
	Subtotal	57	528	377,759	79	678	518,405	99	823	651,727
White/Other Males	65-74	158	991	474,827	174	1,107	669,900	190	1,221	681,327
	75-84	78	518	50,781	97	658	240,683	115	794	425,098
	85+	20	217	171,578	31	296	240,635	41	370	306,154
	Subtotal	271	1,839	679,567	297	2,029	1,155,711	323	2,218	1,427,530
White/Other Females	65-74	298	1,916	1,395,583	310	1,987	1,486,838	323	2,057	1,576,505
	75-84	153	1,027	802,818	172	1,142	915,513	191	1,254	1,025,718
	85+	29	242	161,224	52	383	280,870	73	519	396,247
	Subtotal	489	3,230	2,431,428	517	3,396	2,805,071	545	3,564	2,778,497
Subtotal Males	65-74	201	1,335	655,195	220	1,475	880,583	239	1,812	1,101,319
	75-84	78	457	-44,650	99	815	181,362	120	768	361,489
	85+	2	68	36,423	22	209	159,390	40	340	273,528
	Subtotal	307	2,052	871,812	338	2,282	1,193,002	369	2,508	1,508,957
Subtotal Females	85-74	387	2,536	1,953,802	403	2,829	2,069,157	420	2,720	2,182,336
	75-84	203	1,470	1,123,392	226	1,814	1,282,878	249	1,754	1,398,837
	85+	37	380	228,472	64	558	378,137	90	730	524,418
	Subtotal	819	4,315	3,295,258	655	4,534	3,517,347	690	4,750	3,736,451
Total	85-74	596	3,915	2,657,021	821	4,078	2,894,287	646	4,239	3,128,252
	75-84	294	2,029	1,206,053	328	2,238	1,443,500	356	2,443	1,674,780
	85+	52	545	349,227	85	769	540,897	117	988	728,340
	Total	948	8,508	4,349,749	993	8,821	4,724,434	1,041	7,132	5,095,224

CARDIOVASCULAR - HEART COMPLICATIONS

Hispanic Males	65-74	289	1,481	1,483,950	318	1,820	1,819,629	340	1,742	1,738,427
	75-84	83	491	352,759	104	614	470,803	122	715	567,819
	85+	-79	-434	-377,504	-5	-28	-15,398	28	148	137,947
	Subtotal	380	2,018	1,887,226	420	2,235	2,095,171	458	2,429	2,281,092
Hispanic Females	85-74	388	2,260	1,857,813	409	2,373	1,965,999	429	2,474	2,061,952
	75-84	160	813	757,787	175	891	827,205	189	959	887,231
	85+	1	-15	107	17	85	80,667	30	164	144,665
	Subtotal	568	3,150	2,704,072	595	3,307	2,845,643	623	3,452	2,975,738
Black Males	85-74	269	1,522	1,873,780	304	1,706	1,880,987	338	1,880	2,034,725
	75-84	94	508	442,626	134	731	639,069	170	931	616,321
	85+	-60	-354	-269,492	-3	-28	-6,150	41	231	199,573
	Subtotal	368	2,045	2,161,839	431	2,384	2,473,915	490	2,704	2,768,255
Black Females	65-74	787	4,406	3,971,585	829	4,828	4,174,034	887	4,832	4,362,577
	75-84	297	1,749	1,416,717	363	2,129	1,733,827	422	2,475	2,021,779
	65+	-1	-35	14,958	72	396	368,213	134	764	669,403
	Subtotal	1,147	8,480	5,712,889	1,237	6,992	8,151,325	1,323	7,477	8,588,934
White/Other Males	65-74	2,497	13,293	12,512,308	2,597	13,748	12,985,080	2,896	14,195	13,448,539
	75-84	1,430	8,344	6,879,778	1,564	9,002	7,478,515	1,893	9,640	8,059,894
	85+	182	929	868,713	273	1,414	1,279,652	380	1,875	1,869,924
	Subtotal	4,206	23,013	20,899,822	4,383	23,869	21,515,985	4,558	24,712	22,319,563
White/Other Females	65-74	3,572	19,997	18,657,272	3,647	20,345	18,967,367	3,721	20,688	17,311,731
	75-84	2,611	15,247	12,110,652	2,748	15,929	12,699,188	2,883	16,595	13,274,720
	85+	665	3,878	3,078,048	615	4,875	3,727,796	960	5,446	4,358,289
	Subtotal	6,903	39,346	32,084,458	7,090	40,275	32,894,193	7,275	41,191	33,693,590
Subtotal Males	65-74	3,002	18,124	15,466,561	3,121	18,672	16,032,925	3,237	17,209	16,587,701
	75-84	1,616	9,442	7,782,399	1,782	10,189	6,423,932	1,903	10,678	9,066,566
	85+	-5	-71	48,275	150	762	750,127	294	1,535	1,401,585
	Subtotal	4,803	28,468	24,147,778	5,013	27,492	25,120,628	5,219	28,499	26,077,828
Subtotal Females	65-74	4,691	26,525	22,333,813	4,788	28,981	22,765,093	4,883	27,428	23,168,243
	75-84	3,063	18,036	14,452,335	3,240	18,827	15,133,062	3,394	19,600	15,798,530
	65+	724	4,227	3,420,689	892	5,129	4,156,018	1,053	5,999	4,865,239
	Subtotal	8,446	48,408	39,962,971	8,872	49,544	40,973,177	8,894	50,665	41,950,068
Total	65-74	7,743	42,881	38,014,266	7,894	43,588	38,713,942	8,043	44,281	39,403,885
	75-84	4,794	27,953	22,644,050	5,007	29,019	23,583,848	5,216	30,067	24,507,018
	65+	836	4,782	4,004,619	1,055	5,965	4,978,820	1,268	7,109	5,921,373
	Total	13,380	75,520	64,729,958	13,687	77,044	66,109,653	13,990	78,553	67,475,009

APPENDIX N. Continued

CARDIOVASCULAR - VEIN COMPLICATIONS										
Hispanic Males	65-74	0	8	-3,562	2	20	3,835	3	31	10,312
	75-84	2	14	13,221	3	19	16,357	4	24	18,934
	65+	-4	-21	-15,257	-1	-6	-4,126	0	1	568
	Subtotal	2	20	8,122	4	35	18,921	8	48	24,788
Hispanic Females	65-74	15	117	62,490	18	125	87,782	17	132	72,430
	75-84	-2	-5	-7,340	-1	0	-3,420	0	4	-31
	85+	1	6	4,352	2	13	7,600	2	18	10,181
	Subtotal	15	127	63,835	17	138	70,789	18	145	77,179
Black Males	65-74	2	15	15,522	5	29	24,552	7	43	32,932
	75-84	-1	-25	-7,529	1	-11	591	3	1	7,917
	65+	-3	-25	-16,520	-1	-9	-6,732	1	3	914
	Subtotal	1	-15	4,153	4	8	17,813	7	29	30,897
Black Females	65-74	8	70	42,895	12	94	56,964	15	118	70,254
	75-84	-3	9	-2,243	1	39	15,222	8	66	31,081
	85+	-4	-4	3,252	0	23	18,168	3	45	30,885
	Subtotal	8	106	82,301	12	149	87,228	18	190	110,853
White/Other Males	65-74	56	404	168,739	64	441	191,744	70	477	214,297
	75-84	4	48	13,144	11	91	39,466	18	133	65,023
	85+	6	82	21,601	9	80	31,284	11	97	40,471
	Subtotal	74	552	227,606	83	610	262,700	92	666	297,245
White/Other Females	85-74	93	640	382,620	100	684	408,143	107	728	433,224
	75-84	39	255	182,758	49	321	199,430	59	387	235,291
	85+	19	121	75,752	28	180	107,419	37	237	137,956
	Subtotal	157	1,056	644,879	171	1,148	895,750	185	1,238	745,972
Subtotal Males	65-74	57	414	172,005	64	456	199,654	71	501	228,738
	75-84	5	39	19,620	12	88	48,296	20	132	76,152
	65+	-1	12	-7,779	4	43	9,837	8	73	26,188
	Subtotal	89	518	214,295	80	. 584	256,162	91	652	297,348
Subtotal Females	65-74	109	786	465,290	118	842	497,663	128	898	529,862
	75-84	34	256	156,888	46	334	198,777	57	408	239,727
	85+	18	143	95,110	28	208	130,299	37	271	164,239
	Subtotal	182	1,193	723,922	179	1,301	785,255	196	1,409	845,764
Total	65-74	171	1,231	655,343	182	1,301	897,940	193	1,371	739,944
	75-84	44	329	195,864	56	418	248,347	71	505	295,938
	85+	19	169	95,287	30	242	135,098	41	313	173,835
	Total	239	1,756	966,709	259	1,883	1,040,519	279	2,009	1,113,561
RENAL COMPLICATIONS										
Hispanic Males	65-74	72	428	387,191	79	475	426,606	85	516	481,121
	75-84	13	129	78,233	20	170	108,764	25	204	133,855
	85+	-33	-147	-137,811	-2	51	8,164	11	134	69,982
	Subtotal	87	637	495,865	99	714	557,110	110	784	812,047
Hispanic Females	65-74	147	925	783,445	152	952	805,982	156	978	825,934
	75-84	52	333	239,343	56	366	263,898	60	394	284,751
	85+	11	106	51,218	18	145	72,654	20	178	89,683
	Subtotal	213	1,385	1,091,918	221	1,438	1,128,884	228	1,484	1,182,818
Black Males	65-74	65	360	330,165	73	423	379,668	61	483	426,035
	75-84	22	222	184,318	37	316	233,118	50	401	295,196
	85+	-29	-165	-118,151	1	37	20,503	24	195	127,257
	Subtotal	66	609	513,114	106	755	619,857	128	893	720,534
Black Females	85-74	219	1,459	1,285,274	227	1,511	1,323,262	234	1,559	1,358,641
	75-84	148	1,098	730,095	166	1,224	824,128	185	1,337	909,515
	85+	26	189	149,384	82	422	307,192	92	621	441,741
	Subtotal	409	2,858	2,248,872	438	3,041	2,376,399	485	3,218	2,503,079
White/Other Males	85-74	338	2,237	1,864,389	350	2,302	1,920,524	361	2,366	1,975,573
	75-84	289	1,652	1,214,137	294	1,793	1,321,425	319	1,930	1,425,603
	85+	70	406	293,147	98	575	413,950	128	736	528,562
	Subtotal	687	4,348	3,418,879	718	4,527	3,556,899	750	4,702	3,692,557
White/Other Females	65-74	826	4,958	4,000,664	841	5,037	4,063,296	855	5,114	4,124,842
	75-84	778	4,739	3,493,440	811	4,929	3,829,297	844	5,114	3,782,153
	85+	220	1,467	913,299	274	1,775	1,130,194	325	2,071	1,339,349
	Subtotal	1,826	11,168	8,418,914	1,675	11,443	8,817,676	1,923	11,714	8,615,873
Subtotal Males	85-74	462	3,114	2,847,628	498	3,206	2,725,214	514	3,296	2,801,212
	75-84	320	2,109	1,533,301	350	2,280	1,661,629	379	2,445	1,766,685
	85+	12	168	91,289	65	485	315,281	114	779	523,190
	Subtotal	864	5,686	4,487,873	905	5,923	4,689,846	945	8,157	4,849,050
Subtotal Females	65-74	1,182	7,320	6,043,028	1,201	7,424	6,125,027	1,220	7,526	6,205,483
	75-84	993	6,300	4,567,718	1,032	8,525	4,730,304	1,070	8,745	4,889,246
	85+	294	2,028	1,284,895	355	2,388	1,536,790	414	2,736	1,779,742
	Subtotal	2,425	15,382	11,723,075	2,485	15,726	11,974,007	2,545	16,067	12,221,566
Total	65-74	1,675	10,491	8,735,065	1,699	10,829	8,647,877	1,724	10,765	8,956,723
	75-84	1,333	8,523	6,186,259	1,382	8,804	8,392,721	1,430	9,081	8,595,528
	85+	344	2,428	1,541,468	423	2,694	1,868,203	499	3,345	2,184,326
	Total	3,317	21,229	18,332,422	3,389	21,645	18,641,289	3,481	22,057	18,946,946

APPENDIX N. Continued

ENDOCRINE/METABOLIC COMPLICATIONS										
Hispanic Males	65-74	7	35	25,987	7	39	28,004	7	43	29,787
	75-84	0	0	2,114	1	1	3,045	1	2	3,810
	85+	-3	-5	-10,602	1	10	3,633	2	17	9,661
	Subtotal	8	48	33,332	9	52	38,660	10	57	39,636
Hispanic Females	65-74	4	21	21,299	5	22	21,939	5	24	22,506
	75-84	0	-2	-1,879	0	0	366	1	2	2,134
	85+	0	-2	-1,159	0	-1	-440	0	0	131
	Subtotal	4	18	18,931	5	21	20,809	5	23	22,535
Black Males	65-74	1	-10	4,726	2	-7	8,274	2	-4	7,710
	75-84	0	-1	22	1	3	2,498	2	5	4,732
	85+	0	-7	-2,428	1	-1	2,292	2	4	5,977
	Subtotal	2	-11	8,970	3	-6	10,560	4	0	13,984
Black Females	65-74	12	54	46,424	12	56	49,791	13	59	51,064
	75-84	10	52	45,588	11	57	49,060	11	82	52,212
	85+	2	27	4,311	4	37	12,452	5	46	19,394
	Subtotal	24	138	101,468	26	148	107,072	27	153	112,384
White/Other Males	65-74	20	85	77,187	20	87	79,070	21	89	80,935
	75-84	7	48	27,735	7	51	30,181	8	53	32,517
	85+	2	1	3,769	3	4	8,079	3	7	8,272
	Subtotal	29	135	110,122	30	139	113,815	30	143	117,054
White/Other Females	65-74	40	172	173,314	41	174	174,773	41	175	176,207
	75-84	24	144	102,097	25	148	104,965	28	152	107,770
	85+	7	4	27,060	8	10	30,478	9	15	33,754
	Subtotal	72	321	303,425	73	326	307,341	74	332	311,207
Subtotal Males	65-74	29	119	111,037	29	123	113,727	30	126	118,382
	75-84	8	51	33,256	9	55	38,433	10	59	39,520
	85+	3	8	7,394	4	14	12,785	6	20	17,789
	Subtotal	41	183	157,162	42	190	162,245	44	197	167,246
Subtotal Females	65-74	57	253	244,202	57	255	246,243	56	256	248,245
	75-84	38	206	154,030	37	211	157,985	38	217	161,651
	85+	11	44	42,532	13	52	47,652	14	59	52,590
	Subtotal	104	498	437,808	105	506	443,559	106	514	449,232
Total	65-74	88	373	356,250	87	377	359,567	87	382	382,839
	75-84	45	259	189,389	46	266	194,442	47	273	199,408
	85+	15	56	54,214	17	66	61,212	19	78	87,982
	Total	146	666	598,184	147	696	605,838	149	707	813,413
OPHTHALMIC COMPLICATIONS										
Hispanic Males	65-74	1	2	3,795	1	2	3,795	1	2	3,795
	75-84	0	0	0	0	0	0	0	0	0
	85+	0	0	0	0	0	0	0	0	0
	Subtotat	1	2	3,795	1	2	3,795	1	2	3,795
Hispanic Females	65-74	2	7	5,266	2	7	5,266	2	7	5,266
	75-84	1	2	2,615	1	3	2,865	1	3	3,061
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	3	9	7,875	3	9	8,021	3	10	8,154
Black Males	65-74	1	1	4,988	1	2	5,584	1	2	6,139
	75-84	-1	-2	-1,880	-1	-1	-1,370	0	-1	-909
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	1	0	3,508	1	1	4,255	1	1	4,960
Black Females	65-74	4	12	14,080	4	12	14,262	4	12	14,432
	75-84	3	10	8,722	3	10	8,722	3	10	8,722
	85+	-1	-2	-1,736	0	-1	-1,088	0	-1	-536
	Subtotal	8	20	19,209	8	21	19,560	8	21	19,892
White/Other Males	65-74	4	18	11,335	4	18	12,283	5	19	13,212
	75-84	2	23	1,748	3	24	3,389	3	25	4,943
	85+	1	1	570	1	2	891	1	2	1,195
	Subtotal	8	42	15,147	8	44	18,853	9	46	18,532
White/Other Females	65-74	16	82	55,149	17	63	56,548	17	64	57,923
	75-84	4	28	11,356	4	30	12,888	5	31	14,382
	85+	2	14	6,139	3	15	7,192	3	16	8,207
	Subtotal	23	106	74,049	24	106	76,320	24	109	78,561
Subtotal Males	65-74	8	21	19,653	8	22	20,808	7	23	21,939
	75-84	2	21	-282	2	22	1,461	3	24	3,155
	85+	1	0	-95	1	1	383	1	1	827
	Subtotal	9	43	20,579	9	44	22,560	10	46	24,548
Subtotal Females	65-74	21	78	70,750	22	79	72,355	22	81	73,930
	75-84	7	39	18,967	8	41	20,578	6	42	22,153
	85+	2	13	4,949	2	14	8,134	3	15	7,277
	Subtotal	31	131	95,822	31	133	98,163	32	135	100,870
Total	65-74	27	99	91,317	28	101	93,275	29	103	95,205
	75-84	9	81	19,805	10	63	22,138	11	65	24,429
	85+	3	13	4,994	3	15	8,287	3	16	7,537
	Total	40	174	117,506	41	177	120,733	42	180	123,926

APPENDIX N. Continued

OTHER COMPLICATIONS

Hispanic Males	85-74	8	35	29,024	7	38	31,526	8	40	33,718
	75-84	4	11	12,543	4	12	13,108	4	13	13,573
	85+	-5	-22	-20,593	0	1	708	2	11	9,728
	Subtotal	11	50	44,515	12	54	48,571	13	58	52,198
Hispanic Females	65-74	9	37	30,894	11	42	37,102	12	48	42,599
	75-84	4	42	23,345	5	45	26,815	8	48	29,814
	85+	0	1	679	1	4	4,263	2	7	7,111
	Subtotal	15	84	60,063	17	91	67,494	19	96	74,323
Black Males	65-74	4	9	11,265	4	10	12,768	5	11	14,163
	75-84	0	0	1,888	1	2	3,204	1	4	4,394
	85+	0	-1	-776	0	-1	-374	0	0	-61
	Subtotal	4	9	13,664	5	11	15,651	5	13	17,525
Black Females	65-74	15	79	49,798	16	83	53,207	17	87	58,381
	75-84	-2	-13	-7,353	-1	-7	-2,381	1	-1	2,171
	85+	0	4	3,065	2	10	7,140	3	14	10,615
	Subtotal	15	76	50,426	17	85	58,994	18	92	83,221
White/Other Males	65-74	30	123	107,150	31	130	113,208	33	138	119,143
	75-84	14	61	48,550	18	73	55,723	19	85	64,630
	85+	14	78	51,957	16	83	57,978	18	90	83,891
	Subtotal	59	269	212,190	83	282	223,873	87	296	234,978
White/Other Females	65-74	69	286	245,215	74	303	259,237	78	320	273,016
	75-84	39	177	150,403	45	202	168,900	51	226	188,989
	85+	10	76	42,532	14	93	55,468	18	109	87,943
	Subtotal	123	557	452,685	131	589	478,077	139	622	503,164
Subtotal Males	65-74	39	163	144,494	41	170	151,824	43	177	158,608
	75-84	17	69	58,392	20	82	67,922	23	94	77,180
	85+	11	67	43,921	14	78	54,031	17	89	83,416
	Subtotal	70	314	259,024	75	329	272,223	79	344	285,208
Subtotal Females	65-74	88	372	305,983	91	393	323,293	97	414	340,278
	75-84	39	194	159,613	45	221	180,175	52	248	200,276
	85+	11	84	49,720	16	103	64,017	21	120	77,807
	Subtotal	139	660	523,923	148	697	553,812	158	735	583,299
Total	65-74	128	549	481,002	134	569	478,500	139	588	495,754
	75-84	58	272	224,839	65	301	246,842	72	330	268,456
	85+	24	158	100,138	30	180	117,577	38	201	134,449
	Total	212	986	793,455	223	1,025	824,861	232	1,063	855,940

UNRELATED CONDITIONS

Hispanic Males	85-74	1,038	9,176	9,740,986	1,262	10,838	11,705,132	1,458	12,292	13,424,899
	75-84	306	2,616	2,779,168	458	3,793	3,968,601	583	4,760	4,948,157
	85+	-492	-3,817	-3,358,647	-43	-319	-241,751	147	1,163	1,078,197
	Subtotal	1,393	12,180	13,012,626	1,701	14,502	15,563,581	1,978	18,577	17,844,348
Hispanic Females	65-74	1,689	14,340	15,986,762	1,848	15,533	17,330,837	2,007	18,588	18,520,730
	75-84	522	4,842	4,291,277	635	5,883	5,120,277	732	6,373	5,838,908
	85+	112	938	826,771	182	1,471	1,284,899	237	1,894	1,648,844
	Subtotal	2,454	21,114	22,234,957	2,663	22,573	23,771,124	2,855	23,914	25,182,755
Black Males	85-74	1,062	9,693	9,698,130	1,297	11,539	11,739,062	1,516	13,252	13,633,150
	75-84	373	3,201	2,927,574	624	5,197	4,902,865	851	6,999	6,685,183
	85+	-162	-1,124	-1,384,464	135	1,182	773,878	368	2,948	2,459,971
	Subtotal	1,648	14,697	14,133,220	2,035	17,739	17,288,914	2,401	20,609	20,261,383
Black Females	65-74	2,717	21,967	22,551,338	2,987	24,012	24,795,374	3,238	25,917	26,885,269
	75-84	1,253	11,009	9,847,146	1,588	13,847	12,379,820	1,892	16,043	14,679,620
	85+	121	1,197	940,599	480	4,008	3,402,774	787	6,406	5,502,046
	Subtotal	4,450	38,951	38,154,374	4,949	40,821	39,997,523	5,423	44,491	43,640,577
White/Other Males	65-74	10,358	81,740	94,335,170	11,004	85,962	99,982,072	11,637	90,101	105,517,737
	75-84	5,450	44,750	42,568,037	6,201	50,026	48,367,816	6,929	55,150	53,999,047
	85+	1,174	10,305	8,589,749	1,629	13,498	11,540,033	2,059	16,527	14,339,146
	Subtotal	17,578	140,894	150,558,638	18,625	148,001	158,996,958	19,656	154,997	167,303,110
White/Other Females	65-74	13,242	107,972	110,738,401	13,905	112,283	115,687,674	14,557	118,519	120,511,373
	75-84	9,031	74,916	67,170,400	9,867	80,807	73,109,148	10,885	86,568	78,916,881
	85+	2,710	21,412	16,588,647	3,440	26,562	21,157,759	4,145	31,528	25,563,825
	Subtotal	25,587	208,255	199,290,852	26,809	218,603	207,909,314	28,018	224,844	218,417,729
Subtotal Males	65-74	12,209	99,878	111,571,919	12,983	105,043	118,333,848	13,741	110,102	124,957,419
	75-84	6,250	51,887	49,279,895	7,081	57,803	55,712,679	7,888	63,551	61,961,881
	85+	393	5,064	3,474,415	1,172	10,611	8,607,445	1,895	15,760	13,371,915
	Subtotal	19,899	164,175	172,094,788	21,148	172,798	182,184,449	22,377	181,280	192,109,882
Subtotal Females	65-74	18,804	139,914	143,941,529	17,633	145,374	150,159,504	18,448	150,731	158,260,262
	75-84	10,745	91,130	81,330,664	11,891	97,851	88,081,641	12,615	104,423	94,881,288
	85+	3,235	26,095	20,550,981	4,049	31,894	25,688,018	4,834	37,488	30,642,887
	Subtotal	31,044	258,354	248,897,290	32,501	268,416	259,254,883	33,939	278,342	289,473,208
Total	65-74	29,464	242,749	258,771,764	30,595	250,247	267,907,070	31,710	257,640	276,915,307
	75-84	17,540	146,894	134,793,185	18,792	155,798	144,035,369	20,021	184,545	153,114,002
	85+	4,223	35,397	28,022,210	5,302	43,085	34,925,743	6,348	50,524	41,605,008
	Total	51,739	428,026	427,219,347	53,654	441,245	441,596,278	55,549	454,327	455,823,784

APPENDIX N. Continued

TOTAL										
Hispanic Males	65-74	1,608	12,443	12,634,075	1,883	14,391	14,868,594	2,125	18,096	16,825,093
	75-84	461	3,527	3,418,246	654	4,955	4,830,386	812	6,127	5,990,977
	85+	-659	-4,781	-4,182,035	-53	-310	-268,882	204	1,583	1,388,265
	Subtotal	2,135	16,523	16,653,842	2,521	19,300	19,617,879	2,866	21,783	22,267,978
Hispanic Females	65-74	2,545	19,455	20,134,303	2,765	20,856	21,672,234	2,959	22,096	23,033,746
	75-84	842	6,577	5,779,551	987	7,584	6,761,694	1,112	8,454	7,610,709
	85+	135	1,111	918,832	234	1,839	1,522,270	313	2,418	2,001,653
	Subtotal	3,705	28,304	28,120,491	3,970	30,081	29,927,178	4,214	31,714	31,587,394
Black Males	65-74	1,646	12,876	12,774,826	1,952	15,148	15,209,604	2,236	17,257	17,469,200
	75-84	585	4,449	3,847,391	921	6,968	6,253,508	1,224	9,242	8,424,563
	85+	-259	-1,808	-1,877,378	163	1,267	874,421	493	3,669	3,024,121
	Subtotal	2,487	19,319	18,332,978	3,004	23,156	22,161,617	3,491	26,774	25,772,673
Black Females	65-74	4,357	31,568	30,824,418	4,708	34,076	33,464,724	5,034	36,411	35,923,871
	75-84	2,021	15,849	13,289,507	2,494	19,343	16,515,860	2,923	22,516	19,445,557
	85+	173	1,648	1,142,553	710	5,566	4,484,531	1,168	8,906	7,333,929
	Subtotal	7,042	52,639	48,728,303	7,734	57,682	53,532,043	8,391	62,462	58,085,673
White/Other Males	65-74	14,806	105,940	115,285,475	15,618	110,987	121,818,360	16,409	115,935	128,222,555
	75-84	8,101	60,248	54,416,709	9,085	66,769	61,359,423	10,039	73,102	68,100,847
	85+	1,686	13,234	10,895,072	2,307	17,371	14,607,144	2,897	21,297	18,129,012
	Subtotal	25,350	184,343	186,507,762	26,701	193,051	196,484,490	28,030	201,622	206,304,958
White/Other Females	65-74	20,053	145,995	141,507,189	20,856	150,998	147,078,444	21,645	155,914	152,552,979
	75-84	14,245	105,658	90,364,460	15,343	112,937	97,454,967	16,416	120,056	104,388,817
	85+	4,108	29,915	22,613,431	5,137	36,739	28,489,242	6,129	43,319	34,155,378
	Subtotal	39,106	285,948	259,729,438	40,686	296,191	269,940,778	42,246	306,304	280,021,732
Subtotal Males	65-74	17,759	130,439	138,216,950	18,731	136,625	146,053,584	19,683	142,685	153,729,868
	75-84	9,309	69,903	62,935,043	10,399	77,226	70,645,021	11,458	84,340	78,134,727
	85+	599	6,286	4,391,109	1,669	13,503	10,858,819	2,663	20,201	16,862,138
	Subtotal	29,058	215,882	214,973,344	30,673	226,466	226,922,013	32,261	236,878	238,875,955
Subtotal Females	65-74	26,038	192,416	186,808,063	27,048	198,786	193,863,089	28,038	205,036	200,785,116
	75-84	17,115	129,160	110,001,190	18,362	137,513	118,101,753	19,581	145,679	126,020,734
	85+	4,879	38,384	27,797,683	6,031	44,110	34,440,566	7,143	51,562	40,847,621
	Subtotal	48,163	358,271	327,155,424	50,056	370,682	339,481,904	51,924	382,926	351,642,639
Total	65-74	44,342	326,286	328,701,513	45,739	335,141	339,178,145	47,118	343,874	349,509,051
	75-84	27,139	203,865	177,949,852	28,786	214,912	189,034,275	30,404	225,763	199,922,546
	85+	6,284	48,123	37,168,844	7,798	58,292	46,023,781	9,263	68,131	54,591,058
	Total	78,251	580,908	549,512,151	80,734	597,182	566,584,670	83,191	613,286	583,479,746

* Subtotals and totals are weighted for representation of demographic groups in count of person-months of enrollment.

APPENDIX O. Linear Trend Estimate for Attributable Hospital Stays, Days of Stay and Costs, Point Estimates with Lower and Upper Bounds for 95% Confidence Interval by Type of Complication, Ethnicity, Gender and Age at End of Prior Year, Texas, 1995

		LOWER BOUND *			POINT ESTIMATE *			UPPER BOUND *		
	Age	Hospital Stays	Days of Stay	Cost	Hospital Stays	Days of Stay	Cost	Hospital Stays	Days of Stay	Cost
DIRECTLY ATTRIBUTABLE										
Hispanic Males	65-74	96	460	331,228	96	460	331,228	96	460	331,228
	75-84	25	110	87,697	25	110	87,897	25	110	87,897
	85+	4	13	15,927	4	13	15,927	4	13	15,927
	Subtotal	125	583	435,052	125	583	435,052	125	583	435,052
Hispanic Females	65-74	142	649	505,828	142	649	505,828	142	649	505,828
	75-84	52	210	186,735	52	210	186,735	52	210	186,735
	85+	9	51	27,628	9	51	27,628	9	51	27,628
	Subtotal	203	910	720,191	203	910	720,191	203	910	720,191
Black Males	65-74	143	687	526,402	143	687	526,402	143	687	526,402
	75-84	83	437	306,924	83	437	306,924	83	437	306,924
	85+	29	135	97,365	29	135	97,365	29	135	97,365
	Subtotal	255	1,259	930,691	255	1,259	930,691	255	1,259	930,691
Black Females	65-74	290	1,334	1,042,370	290	1,334	1,042,370	290	1,334	1,042,370
	75-84	202	1,095	679,935	202	1,095	679,935	202	1,095	679,935
	85+	79	468	292,064	79	468	292,064	79	468	292,064
	Subtotal	571	2,897	2,014,369	571	2,897	2,014,369	571	2,897	2,014,369
White/Other Males	65-74	557	2,510	1,843,374	557	2,510	1,843,374	557	2,510	1,843,374
	75-84	406	1,976	1,350,970	406	1,976	1,350,970	406	1,976	1,350,970
	85+	134	677	449,384	134	677	449,384	134	877	449,384
	Subtotal	1,097	5,183	3,643,728	1,097	5,163	3,643,728	1,097	5,163	3,643,728
White/Other Females	65-74	920	4,280	3,048,837	920	4,280	3,048,837	920	4,280	3,048,837
	75-84	611	4,235	2,752,026	811	4,235	2,752,026	811	4,235	2,752,026
	85+	290	1,537	917,666	290	1,537	917,666	290	1,537	917,666
	Subtotal	2,021	10,052	6,718,529	2,021	10,052	6,718,529	2,021	10,052	6,718,529
Subtotal Males	65-74	796	3,857	2,701,004	796	3,657	2,701,004	796	3,657	2,701,004
	75-84	514	2,523	1,745,791	514	2,523	1,745,791	514	2,523	1,745,791
	85+	167	825	562,878	167	825	562,676	187	825	582,876
	Subtotal	1,477	7,005	5,009,471	1,477	7,005	5,009,471	1,477	7,005	5,009,471
Subtotal Females	65-74	1,352	6,263	4,597,035	1,352	8,263	4,597,035	1,352	6,263	4,597,035
	75-84	1,065	5,540	3,818,696	1,065	5,540	3,816,696	1,065	5,540	3,618,696
	85+	378	2,056	1,237,358	378	2,056	1,237,358	378	2,056	1,237,358
	Subtotal	2,795	13,859	9,453,089	2,795	13,859	9,453,089	2,795	13,859	9,453,089
Total	65-74	2,148	9,920	7,298,039	2,148	9,920	7,298,039	2,148	9,920	7,298,039
	75-84	1,579	8,063	5,364,487	1,579	8,063	5,364,487	1,579	6,083	5,364,487
	85+	545	2,881	1,800,034	545	2,881	1,800,034	545	2,881	1,800,034
	Total	4,272	20,864	14,462,560	4,272	20,864	14,462,560	4,272	20,864	14,462,560
NEUROLOGICAL COMPLICATIONS										
Hispanic Males	65-74	67	519	369,642	78	580	425,996	88	633	474,724
	75-84	21	131	88,247	31	199	142,505	39	253	186,309
	85+	-44	-318	-250,639	-6	-42	-35,376	9	64	46,674
	Subtotal	89	852	458,066	108	759	549,798	122	854	831,058
Hispanic Females	65-74	119	748	551,898	126	790	588,235	132	827	620,027
	75-84	38	262	192,530	45	309	231,185	51	350	264,187
	85+	0	15	2,852	6	54	29,738	10	85	50,682
	Subtotal	158	1,034	758,077	170	1,110	817,814	181	1,179	873,696
Black Males	65-74	69	436	376,246	87	554	473,700	104	663	563,522
	75-84	16	171	87,127	37	310	175,081	56	434	271,572
	85+	-32	-227	-152,702	-4	-47	-22,858	17	90	78,318
	Subtotal	86	595	452,926	118	802	618,544	148	997	770,035
Black Females	65-74	249	1,799	1,421,522	269	1,923	1,523,000	287	2,038	1,616,847
	75-84	63	534	412,875	116	760	585,034	147	963	739,898
	85+	-39	-182	-177,040	5	87	34,000	42	297	211,310
	Subtotal	325	2,380	1,822,080	372	2,876	2,060,120	417	2,958	2,284,598
White/Other Males	65-74	763	4,408	3,771,705	792	4,564	3,914,076	820	4,717	4,053,407
	75-84	411	2,662	2,122,191	460	2,932	2,350,125	507	3,193	2,570,887
	85+	74	506	402,512	108	708	558,035	140	895	704,943
	Subtotal	1,281	7,758	6,457,996	1,340	8,083	6,738,269	1,399	6,404	7,013,783
White/Other Females	65-74	950	5,576	4,692,662	976	5,722	4,819,336	1,005	5,864	4,943,623
	75-84	712	4,648	3,407,898	771	4,984	3,687,329	829	5,311	3,960,063
	85+	132	1,025	694,637	195	1,400	988,720	256	1,761	1,271,448
	Subtotal	1,615	11,347	8,890,151	1,891	11,779	9,247,480	1,968	12,204	9,599,856
Subtotal Males	65-74	934	5,595	4,709,158	968	5,782	4,877,680	1,002	5,965	5,042,721
	75-84	478	3,184	2,445,782	532	3,485	2,697,288	583	3,777	2,941,252
	85+	62	420	344,485	103	668	535,530	142	902	715,771
	Subtotal	1,513	9,413	7,687,129	1,580	9,793	6,009,618	1,847	10,167	8,326,821
Subtotal Females	65-74	1,359	8,420	6,698,204	1,391	6,594	7,049,234	1,423	6,764	7,197,479
	75-84	681	5,823	4,283,842	947	6,204	4,597,663	1,011	8,575	4,904,142
	85+	143	1,166	768,220	215	1,590	1,103,378	284	1,999	1,425,821
	Subtotal	2,386	15,402	11,964,464	2,473	15,899	12,374,427	2,559	18,389	12,778,831
Total	65-74	2,311	14,115	11,694,644	2,358	14,368	11,918,900	2,404	14,818	12,140,063
	75-84	1,395	9,207	6,896,131	1,479	9,690	7,296,660	1,562	10,164	7,689,774
	85+	238	1,771	1,258,232	319	2,259	1,638,889	398	2,731	2,009,414
	Total	3,943	25,067	19,862,559	4,053	25,690	20,382,887	4,162	26,307	20,897,789

APPENDIX O. Continued

CARDIOVASCULAR - ARTERY COMPLICATIONS

Hispanic Males	65-74	28	270	238,001	32	301	274,838	38	328	306,691
	75-84	4	7	-11,449	7	28	11,714	9	44	30,415
	85+	-13	-111	-90,658	-1	-6	-10,178	4	34	20,498
	Subtotal	33	289	233,524	39	333	282,376	44	372	325,650
Hispanic Females	65-74	48	331	308,681	52	349	329,402	55	364	347,531
	75-84	13	64	82,445	16	87	98,888	19	107	112,918
	85+	0	-1	812	2	14	13,408	3	26	23,218
	Subtotal	62	397	398,818	67	431	429,314	72	461	456,919
Black Males	65-74	19	91	67,012	26	148	129,785	33	201	187,643
	75-84	-11	-129	-108,481	-2	-60	-46,152	5	2	9,559
	85+	-9	-87	-68,083	3	-3	1,511	12	61	54,669
	Subtotal	13	-22	-17,480	26	79	80,855	38	173	173,105
Black Females	65-74	39	285	308,620	49	339	360,641	56	389	408,750
	75-64	11	153	33,861	27	275	149,997	42	384	254,466
	85+	-26	-141	-178,092	-1	55	-8,920	20	219	133,212
	Subtotal	40	406	267,540	64	577	425,065	87	738	573,815
White/Other Males	65-74	143	884	294,901	161	1,011	508,973	178	1,136	718,468
	75-84	65	422	-78,807	88	576	129,672	108	725	331,590
	85+	17	194	151,171	29	280	226,564	40	360	297,782
	Subtotal	242	1,628	572,642	270	1,836	875,045	299	2,041	1,172,116
White/Other Females	65-74	285	1,844	1,302,849	299	1,922	1,402,846	312	1,998	1,500,959
	75-64	138	937	714,197	159	1,063	837,637	180	1,185	958,119
	85+	20	164	112,180	44	338	242,811	68	487	368,398
	Subtotal	453	3,013	2,206,788	483	3,197	2,396,962	514	3,378	2,584,500
Subtotal Males	65-74	198	1,320	630,469	216	1,461	858,214	237	1,599	1,081,258
	75-84	69	389	-132,546	91	558	85,163	113	718	296,345
	85+	18	185	138,733	33	292	231,858	47	392	319,712
	Subtotal	305	2,035	648,132	336	2,266	1,171,174	387	2,494	1,488,924
Subtotal Females	65-74	392	2,563	1,987,748	408	2,654	2,100,245	424	2,743	2,210,669
	75-84	192	1,406	1,060,478	217	1,556	1,208,679	241	1,703	1,349,460
	85+	27	313	169,564	56	505	332,922	84	690	490,083
	Subtotal	614	4,284	3,263,537	650	4,505	3,487,716	686	4,723	3,708,856
Total	65-74	600	3,939	2,891,813	625	4,100	2,928,828	649	4,259	3,158,602
	75-84	276	1,904	1,067,159	309	2,123	1,314,896	341	2,339	1,558,046
	85+	57	579	378,256	69	797	564,769	120	1,008	745,369
	Total	939	8,457	4,291,903	987	6,774	4,669,551	1,034	7,088	5,043,246

CARDIOVASCULAR - HEART COMPLICATIONS

Hispanic Males	65-74	280	1,435	1,438,604	310	1,590	1,590,319	337	1,725	1,721,505
	75-84	78	464	326,411	102	601	457,906	121	711	564,069
	85+	-99	-542	-473,086	-8	-42	-29,664	26	149	139,351
	Subtotal	366	1,946	1,818,861	411	2,186	2,048,132	451	2,398	2,251,226
Hispanic Females	65-74	377	2,215	1,814,685	403	2,342	1,936,391	425	2,454	2,042,873
	75-84	156	793	740,274	173	880	817,308	188	954	883,034
	85+	-2	-30	-12,444	16	80	76,493	30	166	145,770
	Subtotal	540	3,017	2,584,662	577	3,209	2,757,408	610	3,383	2,913,769
Black Males	65-74	252	1,438	1,587,349	292	1,642	1,795,312	329	1,833	1,986,988
	75-84	80	429	372,334	124	678	590,742	164	897	785,959
	85+	-72	-420	-322,396	-8	-53	-28,252	41	227	196,421
	Subtotal	333	1,857	1,989,526	403	2,234	2,335,743	468	2,587	2,660,535
Black Females	65-74	761	4,265	3,640,113	807	4,512	4,087,596	850	4,741	4,277,975
	75-84	264	1,562	1,260,807	338	1,989	1,617,075	405	2,374	1,937,552
	85+	-21	-151	-80,145	60	330	313,783	129	733	644,748
	Subtotal	1,076	6,079	5,369,300	1,177	6,652	5,860,356	1,273	7,193	6,323,433
White/Other Males	65-74	2,405	12,874	12,077,179	2,515	13,373	12,595,463	2,622	13,862	13,102,665
	75-84	1,340	7,896	6,471,308	1,486	6,817	7,126,548	1,627	9,317	7,765,105
	85+	155	785	747,227	254	1,315	1,196,085	348	1,818	1,620,081
	Subtotal	4,009	22,061	19,792,849	4,203	22,999	20,686,251	4,394	23,920	21,564,482
White/Other Females	65-74	3,495	19,644	16,321,820	3,576	20,025	16,683,546	3,659	20,399	17,038,456
	75-84	2,503	14,711	11,647,838	2,653	15,458	12,292,490	2,800	16,186	12,921,691
	85+	603	3,548	2,808,890	767	4,421	3,520,478	925	5,260	4,204,589
	Subtotal	6,661	38,145	31,036,907	6,866	39,162	31,923,733	7,068	40,185	32,798,266
Subtotal Males	65-74	2,989	16,064	15,404,422	3,109	16,616	15,976,761	3,227	17,160	16,537,281
	75-84	1,554	9,132	7,480,153	1,708	9,900	8,179,247	1,857	10,646	8,857,379
	85+	124	622	632,225	241	1,252	1,163,737	352	1,847	1,665,189
	Subtotal	4,788	26,392	24,076,051	4,999	27,422	25,054,514	5,208	28,435	26,016,949
Subtotal Females	65-74	4,720	28,659	22,460,721	4,814	27,104	22,881,324	4,907	27,539	23,294,170
	75-84	3,012	17,679	14,144,852	3,177	18,509	14,859,389	3,338	19,319	15,557,207
	85+	661	3,889	3,144,783	842	4,860	3,936,798	1,015	5,794	4,698,770
	Subtotal	8,414	48,245	39,641,549	8,641	49,393	40,841,087	8,866	50,524	41,827,032
Total	65-74	7,765	42,985	38,116,864	7,915	43,683	38,809,903	8,063	44,372	39,493,383
	75-84	4,667	27,314	22,081,664	4,891	28,437	23,070,518	5,110	29,538	24,041,065
	85+	869	4,961	4,152,187	1,083	6,112	5,100,156	1,290	7,227	6,018,090
	Total	13,333	75,264	84,516,953	13,642	76,621	85,907,560	13,948	78,342	67,283,613

APPENDIX O. Continued

CARDIOVASCULAR - VEIN COMPLICATIONS										
Hispanic Males	65-74	-1	4	-6,035	1	17	2,237	3	29	9,389
	75-84	2	13	12,521	3	19	16,014	4	24	16,834
	85+	-4	-25	-18,195	-1	-6	-4,564	0	1	631
	Subtotal	1	16	5,229	3	31	14,930	6	45	23,524
Hispanic Females	65-74	14	114	60,402	16	123	68,322	17	130	71,501
	75-84	-2	-7	-6,328	-1	-1	-3,979	0	4	-268
	85+	1	8	3,846	2	12	7,432	2	16	10,225
	Subtotal	14	118	57,970	16	130	66,455	18	141	74,135
Black Males	65-74	1	8	11,353	4	24	21,384	6	39	30,629
	75-84	-2	-30	-10,434	0	-15	-1,407	2	-1	6,662
	85+	-3	-28	-18,487	-1	-11	-7,554	1	2	797
	Subtotal	-1	-27	-3,390	3	-2	11,765	6	21	25,982
Black Females	65-74	6	54	33,428	10	81	49,462	13	106	64,291
	75-84	-6	-6	-10,830	0	28	6,792	4	56	26,443
	65+	-5	-11	-763	-1	19	15,869	3	43	29,844
	Subtotal	1	73	42,788	8	121	70,885	15	168	97,010
White/Other Males	65-74	52	371	147,565	59	411	172,785	65	450	197,488
	75-84	-1	18	-4,812	7	66	24,061	14	112	52,064
	85+	5	57	18,739	6	76	29,311	11	95	39,297
	Subtotal	64	489	186,625	74	551	227,031	84	613	264,765
White/Other Females	65-74	86	596	356,882	94	844	384,651	101	690	412,094
	75-84	31	202	133,920	42	275	174,088	53	347	213,294
	85+	15	96	62,772	25	161	97,346	34	223	130,565
	Subtotal	139	938	579,067	154	1,038	634,781	170	1,138	689,723
Subtotal Males	65-74	56	409	168,971	64	454	196,912	71	497	224,276
	75-84	2	18	7,385	10	69	37,689	17	117	67,065
	85+	3	38	6,878	6	62	20,218	10	85	32,804
	Subtotal	68	511	211,208	79	580	253,317	90	648	294,737
Subtotal Females	65-74	112	803	474,881	120	856	506,667	128	909	537,867
	75-84	29	224	137,966	41	303	181,938	53	381	224,877
	65+	14	119	81,907	25	189	119,809	35	257	156,273
	Subtotal	160	1,177	715,162	177	1,267	777,072	194	1,395	838,143
Total	65-74	173	1,242	661,590	184	1,311	703,762	195	1,380	745,393
	75-84	36	276	165,655	50	370	216,773	64	461	270,907
	65+	21	180	101,300	31	251	140,059	42	320	177,569
	Total	236	1,737	955,314	256	1,865	1,029,707	276	1,992	1,103,322
RENAL COMPLICATIONS										
Hispanic Males	65-74	70	412	374,016	76	465	418,093	84	510	456,205
	75-84	12	120	71,419	19	168	105,426	25	203	132,885
	65+	-42	-199	-176,342	-4	43	2,413	11	135	70,548
	Subtotal	83	611	475,464	97	697	543,210	106	773	603,222
Hispanic Females	65-74	145	914	774,519	150	944	799,625	155	971	821,966
	75-84	51	325	233,208	55	361	260,227	60	392	263,260
	65+	10	100	47,878	16	143	71,543	20	177	89,977
	Subtotal	207	1,342	1,060,751	216	1,404	1,105,835	225	1,461	1,146,645
Black Males	65-74	61	330	307,208	70	401	362,444	79	466	413,355
	75-84	16	168	139,700	33	293	216,192	48	386	284,562
	85+	-36	-206	-143,604	-2	20	9,034	24	193	125,622
	Subtotal	74	529	454,176	98	691	572,597	121	843	683,689
Black Females	65-74	214	1,425	1,260,604	223	1,483	1,303,290	231	1,537	1,342,768
	75-84	136	1,037	683,862	159	1,178	769,507	160	1,304	884,539
	85+	17	126	106,900	56	386	282,877	89	605	430,727
	Subtotal	386	2,713	2,143,798	419	2,919	2,291,111	449	3,114	2,430,030
White/Other Males	65-74	326	2,177	1,612,885	340	2,248	1,874,246	353	2,316	1,934,491
	75-84	252	1,555	1,140,943	260	1,710	1,256,714	306	1,861	1,372,779
	85+	61	355	257,452	93	540	389,337	122	715	513,917
	Subtotal	652	4,150	3,265,375	686	4,345	3,416,419	720	4,537	3,564,898
White/Other Females	65-74	811	4,876	3,937,014	627	4,964	4,005,649	843	5,049	4,072,990
	75-84	752	4,591	3,386,604	788	4,798	3,535,415	824	5,000	3,680,660
	85+	198	1,341	824,393	257	1,677	1,061,201	313	2,000	1,288,665
	Subtotal	1,763	10,612	8,157,191	1,816	11,113	8,377,066	1,869	11,410	6,593,692
Subtotal Males	65-74	481	3,104	2,639,116	497	3,197	2,717,520	512	3,288	2,794,305
	75-84	307	2,037	1,478,464	339	2,217	1,614,290	369	2,392	1,746,043
	85+	56	432	277,653	96	671	447,262	134	898	607,318
	Subtotal	881	5,669	4,474,243	902	5,907	4,657,468	942	6,142	4,837,686
Subtotal Females	65-74	1,187	7,351	6,067,155	1,206	7,452	6,147,127	1,224	7,551	6,225,623
	75-84	976	6,198	4,494,279	1,016	6,435	4,664,940	1,056	6,665	4,831,608
	65+	270	1,693	1,190,360	337	2,281	1,461,694	400	2,654	1,722,716
	Subtotal	2,417	15,332	11,687,237	2,477	15,680	11,940,529	2,537	16,024	12,190,387
Total	65-74	1,678	10,511	8,751,578	1,703	10,648	8,663,122	1,727	10,783	6,973,127
	75-84	1,304	8,355	6,062,711	1,355	6,651	6,279,949	1,405	8,941	6,493,165
	65+	356	2,499	1,590,952	433	2,952	1,908,698	507	3,391	2,216,764
	Total	3,306	21,165	16,284,738	3,379	21,584	16,596,047	3,451	21,999	16,904,099

APPENDIX O. Continued

ENDOCRINE/METABOLIC COMPLICATIONS

Hispanic Males	65-74	6	34	25,286	7	38	27,564	7	42	29,533
	75-84	0	0	1,906	1	1	2,943	1	2	3,780
	85+	-4	-9	-14,359	1	10	3,072	2	17	9,718
	Subtotal	6	46	32,238	9	51	35,907	9	58	39,158
Hispanic Females	65-74	4	20	21,046	5	22	21,765	5	23	22,393
	75-84	0	-3	-2,194	0	0	75	1	2	2,010
	85+	0	-2	-1,271	0	-1	-477	0	0	141
	Subtotal	4	15	17,347	4	19	19,638	5	22	21,713
Black Males	65-74	1	-12	4,012	1	-8	5,731	2	-5	7,315
	75-84	0	-2	-864	1	2	1,889	2	5	4,349
	85+	0	-8	-3,374	1	-1	1,896	2	4	5,921
	Subtotal	2	-14	4,978	3	-8	8,981	4	-2	12,738
Black Females	65-74	12	52	47,538	12	55	49,072	12	58	50,492
	75-84	9	50	43,881	10	55	47,781	11	61	51,290
	85+	1	24	2,119	3	35	11,198	5	45	18,828
	Subtotal	23	131	97,078	25	140	103,353	28	149	109,272
White/Other Males	65-74	20	83	75,417	20	85	77,502	20	67	79,543
	75-84	8	45	28,080	7	49	28,743	7	52	31,322
	85+	2	0	3,088	2	3	5,609	3	7	7,992
	Subtotal	28	130	106,242	29	134	110,065	30	139	113,823
White/Other Females	65-74	40	170	171,831	40	172	173,430	41	174	174,999
	75-84	24	141	99,842	25	145	102,983	25	149	106,050
	85+	7	2	25,688	8	8	29,397	8	13	32,963
	Subtotal	71	314	298,359	72	320	302,648	73	326	306,877
Subtotal Males	65-74	29	116	110,742	29	122	113,460	30	126	118,123
	75-84	8	49	31,900	9	53	35,258	10	57	38,515
	85+	4	12	11,879	5	18	15,962	8	23	19,814
	Subtotal	41	183	158,787	42	189	181,900	44	196	168,929
Subtotal Females	65-74	57	253	244,803	58	258	248,793	58	259	248,748
	75-84	35	203	152,243	37	209	156,395	38	215	160,449
	85+	11	42	40,611	12	50	46,128	14	57	51,431
	Subtotal	103	497	436,987	105	505	442,791	106	513	448,518
Total	65-74	86	373	356,737	87	378	360,022	87	382	363,263
	75-84	44	255	186,365	45	262	191,682	47	289	196,901
	85+	18	58	55,274	17	87	62,083	19	77	68,678
	Total	145	684	597,002	147	695	604,717	149	705	612,351

OPHTHALMIC COMPLICATIONS

Hispanic Males	65-74	1	2	3,795	1	2	3,795	1	2	3,795
	75-84	0	0	0	0	0	0	0	0	0
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	1	2	3,795	1	2	3,795	1	2	3,795
Hispanic Females	65-74	2	7	5,266	2	7	5,266	2	7	5,266
	75-84	1	2	2,552	1	3	2,829	1	3	3,066
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	3	9	7,753	3	9	7,930	3	10	8,091
Black Males	65-74	1	1	4,710	1	2	5,374	1	2	5,986
	75-84	-1	-2	-2,063	-1	-1	-1,495	0	-1	-988
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	0	0	3,095	1	0	3,924	1	1	4,702
Black Females	65-74	4	12	13,962	4	12	14,168	4	12	14,356
	75-84	3	10	6,722	3	10	6,722	3	10	8,722
	85+	-1	-2	-1,910	0	-1	-1,188	0	-1	-581
	Subtotal	6	20	18,934	8	20	19,327	8	21	19,698
White/Other Males	65-74	4	17	10,483	4	18	11,502	4	19	12,519
	75-84	2	22	642	3	23	2,421	3	25	4,145
	85+	1	1	475	1	1	825	1	2	1,158
	Subtotal	7	41	13,252	8	42	15,119	8	44	18,954
White/Other Females	65-74	16	81	53,728	16	82	55,260	17	63	58,764
	75-84	3	27	10,153	4	29	11,829	4	30	13,464
	85+	2	14	5,707	3	15	6,857	3	18	7,962
	Subtotal	22	103	71,112	23	105	73,599	24	107	78,051
Subtotal Males	65-74	6	21	19,528	6	22	20,893	7	22	21,836
	75-84	2	20	-1,028	2	22	818	3	23	2,603
	85+	1	0	303	1	1	665	1	2	1,007
	Subtotal	9	42	20,431	9	44	22,444	10	48	24,424
Subtotal Females	65-74	21	78	71,223	22	80	72,788	22	81	74,324
	75-84	7	39	16,239	7	40	19,930	8	42	21,582
	85+	2	12	4,505	2	14	5,781	3	15	7,008
	Subtotal	30	130	95,259	31	133	97,824	32	135	100,354
Total	65-74	27	99	91,604	28	101	93,543	29	103	95,456
	75-84	9	60	18,409	9	82	20,864	10	64	23,273
	85+	3	13	5,190	3	15	8,448	4	18	7,665
	Total	40	174	117,008	41	177	120,260	41	180	123,478

APPENDIX O. Continued

OTHER COMPLICATIONS										
Hispanic Males	65-74	6	34	28,188	7	37	30,985	8	39	33,404
	75-84	4	11	12,417	4	12	13,046	4	13	13,555
	85+	-7	-29	-28,216	0	0	-132	2	11	9,811
	Subtotal	10	49	43,181	11	53	47,654	13	58	51,616
Hispanic Females	65-74	8	35	28,435	10	40	35,406	12	45	41,506
	75-84	4	41	22,471	5	45	26,320	8	48	29,604
	85+	0	1	120	1	4	4,078	2	7	7,160
	Subtotal	13	79	53,795	16	87	62,863	18	94	71,070
Black Males	65-74	4	6	10,571	4	10	12,241	5	11	13,780
	75-84	0	-1	1,414	1	1	2,880	1	3	4,190
	85+	0	-1	-858	0	-1	-408	0	0	-65
	Subtotal	4	6	12,567	4	10	14,771	5	12	16,840
Black Females	65-74	14	76	47,584	15	81	51,414	16	85	54,957
	75-84	-3	-18	-9,807	-1	-9	-4,199	0	-3	845
	65+	0	3	1,968	2	9	6,512	3	13	10,330
	Subtotal	13	70	45,279	15	79	52,638	17	88	59,573
White/Other Males	65-74	28	118	101,578	30	124	108,215	32	131	114,712
	75-84	12	53	40,292	15	66	50,361	18	79	60,114
	85+	14	74	50,178	18	81	56,752	18	89	62,961
	Subtotal	55	254	199,434	59	269	212,001	63	283	224,355
White/Other Females	85-74	65	268	230,965	70	287	246,331	74	305	261,407
	75-84	35	158	135,857	41	185	158,118	48	211	175,893
	65+	6	89	37,229	12	87	51,353	17	105	64,932
	Subtotal	112	514	419,790	121	550	447,821	130	588	475,066
Subtotal Males	65-74	39	163	143,712	41	170	150,917	43	177	157,973
	75-84	15	64	54,326	19	77	84,397	22	90	74,167
	85+	14	76	52,333	16	85	59,990	18	94	67,214
	Subtotal	70	312	258,051	74	328	271,326	78	343	284,385
Subtotal Females	65-74	88	378	311,077	93	399	327,959	98	419	344,529
	75-84	36	182	150,326	43	210	171,908	50	238	192,988
	85+	10	77	44,356	15	97	59,755	19	116	74,570
	Subtotal	137	654	519,655	147	692	549,824	157	730	579,585
Total	65-74	129	552	463,568	134	571	480,900	140	591	497,993
	75-84	53	255	211,671	61	285	234,823	68	316	257,547
	85+	25	161	102,779	31	182	119,749	36	203	138,181
	Total	211	980	788,607	221	1,019	820,281	231	1,058	851,583
UNRELATED CONDITIONS										
Hispanic Males	65-74	963	6,621	9,084,549	1,214	10,479	11,280,837	1,430	12,065	13,179,929
	75-84	272	2,354	2,513,877	441	3,664	3,838,646	578	4,723	4,908,363
	85+	-611	-4,741	-4,181,385	-61	-457	-364,550	148	1,176	1,090,283
	Subtotal	1,292	11,417	12,173,966	1,631	13,976	14,986,528	1,932	16,244	17,477,979
Hispanic Females	65-74	1,599	13,868	15,454,411	1,799	15,207	18,963,663	1,975	16,378	18,284,129
	75-84	494	4,635	4,082,431	619	5,548	5,002,118	725	8,323	5,786,811
	85+	102	855	755,397	178	1,443	1,261,162	238	1,901	1,655,125
	Subtotal	2,278	19,883	20,939,284	2,533	21,664	22,813,682	2,783	23,278	24,510,345
Black Males	65-74	953	8,840	8,755,860	1,215	10,891	11,023,065	1,456	12,782	13,112,715
	75-84	284	2,488	2,220,767	563	4,706	4,416,917	812	8,690	6,379,878
	85+	-221	-1,583	-1,818,061	110	970	592,729	363	2,920	2,434,136
	Subtotal	1,435	13,017	12,391,905	1,864	16,392	15,890,818	2,287	19,559	19,172,816
Black Females	65-74	2,542	20,638	21,094,044	2,845	22,937	23,815,569	3,126	25,063	25,947,509
	75-84	1,089	9,712	8,801,930	1,465	12,678	11,447,353	1,803	15,342	14,006,922
	65+	24	440	277,752	425	3,575	3,023,403	762	6,209	5,330,206
	Subtotal	4,058	33,917	33,142,617	4,618	38,252	37,447,004	5,145	42,341	41,506,152
White/Other Males	65-74	9,764	77,854	69,137,880	10,472	82,483	95,328,390	11,165	87,012	101,386,541
	75-84	4,938	41,150	38,611,475	5,782	46,942	44,977,720	8,560	52,552	51,143,618
	65+	1,040	9,362	7,717,980	1,536	12,847	10,938,938	2,004	16,140	13,981,480
	Subtotal	16,416	132,999	141,185,805	17,581	140,777	150,420,427	18,887	148,423	159,498,242
White/Other Females	65-74	12,568	103,591	105,729,119	13,295	108,315	111,130,739	14,008	112,950	116,430,582
	75-84	8,373	70,284	62,500,277	9,289	76,738	89,005,274	10,183	83,034	75,354,363
	65+	2,411	19,301	14,715,746	3,208	24,924	19,704,353	3,975	30,329	24,500,325
	Subtotal	24,006	197,456	188,141,220	25,345	206,599	197,580,186	28,664	215,614	206,888,314
Subtotal Males	65-74	12,124	99,311	110,830,032	12,906	104,531	117,663,297	13,872	109,642	124,355,441
	75-84	5,896	49,382	48,535,329	6,774	55,615	53,333,353	7,625	61,680	59,927,541
	85+	1,041	9,679	7,745,161	1,631	13,880	11,632,404	2,187	17,844	15,299,793
	Subtotal	19,807	163,539	171,350,918	21,063	172,212	181,498,788	22,299	160,742	191,480,394
Subtotal Females	65-74	17,048	141,521	145,771,231	17,856	146,846	151,835,259	18,849	152,072	157,787,466
	75-84	10,318	88,093	78,261,262	11,311	95,149	85,387,536	12,280	102,040	92,288,011
	85+	2,929	23,919	16,623,484	3,606	30,165	24,156,549	4,849	38,175	29,479,727
	Subtotal	30,838	256,917	247,418,015	32,307	267,073	257,873,009	33,758	277,092	268,188,248
Total	65-74	29,829	243,849	260,111,332	30,750	251,275	289,159,992	31,855	258,599	278,083,848
	75-84	16,791	141,566	129,262,565	18,108	150,935	138,987,168	19,401	160,130	148,531,736
	65+	4,386	36,561	29,067,785	5,436	44,043	35,785,573	6,453	51,287	42,290,383
	Total	51,444	425,985	424,999,749	53,374	439,309	439,490,394	55,283	452,494	453,829,369

APPENDIX O. Continued

TOTAL										
Hispanic Males	65-74	1,515	11,792	11,887,277	1,824	13,970	14,385,893	2,091	15,853	16,546,402
	75-84	418	3,209	3,103,048	633	4,799	4,676,098	808	6,082	5,946,107
	85+	-819	-5,961	-5,214,954	-77	-486	-423,053	206	1,601	1,403,440
	Subtotal	2,008	15,610	15,879,378	2,433	18,672	18,947,383	2,810	21,384	21,842,280
Hispanic Females	65-74	2,458	18,900	19,525,171	2,705	20,473	21,252,103	2,920	21,849	22,763,020
	75-84	806	8,324	5,532,124	966	7,440	6,621,707	1,103	8,393	7,551,358
	85+	120	998	824,819	229	1,802	1,491,004	314	2,428	2,009,926
	Subtotal	3,481	26,805	26,596,628	3,805	28,973	28,801,129	4,098	30,938	30,796,573
Black Males	65-74	1,504	11,827	11,650,723	1,844	14,351	14,355,438	2,158	16,678	16,848,335
	75-84	465	3,548	2,986,424	838	6,349	5,661,570	1,172	8,852	8,052,669
	85+	-344	-2,426	-2,430,197	128	1,009	643,463	488	3,632	2,991,183
	Subtotal	2,202	17,201	16,218,992	2,775	21,457	20,468,490	3,313	25,450	24,451,134
Black Females	65-74	4,130	29,940	29,109,783	4,523	32,757	32,078,580	4,887	35,363	34,820,313
	75-84	1,788	14,131	11,703,236	2,319	18,057	15,327,998	2,797	21,588	18,588,612
	85+	29	594	242,852	828	4,962	3,969,599	1,131	8,633	7,100,686
	Subtotal	8,499	48,687	44,963,782	7,275	54,335	50,344,024	8,006	59,662	55,417,751
White/Other Males	65-74	14,061	101,295	109,272,745	14,949	106,828	116,434,529	15,817	112,242	123,443,186
	75-84	7,430	55,798	49,680,282	8,510	62,957	57,301,356	9,555	69,891	64,682,593
	85+	1,502	12,011	9,798,204	2,181	18,528	13,850,839	2,822	20,798	17,678,993
	Subtotal	23,850	174,672	175,428,147	25,328	184,201	186,344,354	26,781	193,568	197,077,167
White/Other Females	65-74	19,237	140,911	135,845,505	20,117	146,394	141,950,625	20,980	151,773	147,940,711
	75-84	13,382	99,934	84,788,612	14,584	107,907	92,555,189	15,757	115,689	100,135,623
	85+	3,686	27,117	20,204,908	4,809	34,568	26,620,183	5,889	41,731	32,787,733
	Subtotal	37,062	272,696	246,519,114	38,792	283,915	257,702,604	40,499	294,978	268,731,075
Subtotal Males	65-74	17,652	129,761	137,357,152	18,635	138,012	145,278,458	19,596	142,134	153,032,215
	75-84	8,844	66,778	59,645,558	9,996	74,517	67,793,293	11,113	82,024	75,696,720
	85+	1,489	12,290	9,772,325	2,300	17,756	14,670,321	3,065	22,912	19,291,297
	Subtotal	28,939	215,102	214,092,420	30,563	225,747	226,109,996	32,161	236,217	237,930,721
Subtotal Females	65-74	26,335	194,290	188,884,076	27,320	200,503	195,764,429	28,286	206,601	202,517,908
	75-84	16,552	125,387	106,342,182	17,861	134,155	114,845,074	19,139	142,718	123,149,018
	85+	4,446	33,485	25,305,169	5,688	41,807	32,460,169	6,882	49,812	39,343,757
	Subtotal	47,892	356,498	325,394,953	49,804	369,028	337,837,348	51,689	381,384	350,111,040
Total	65-74	44,547	327,584	330,237,768	45,931	336,356	340,615,032	47,296	345,007	350,849,165
	75-84	26,153	197,254	171,316,817	27,886	208,878	182,979,819	29,588	220,286	194,426,900
	85+	6,513	49,664	38,509,969	7,987	59,559	47,126,657	9,414	69,140	55,470,165
	Total	77,868	578,396	546,876,392	80,371	594,798	564,083,945	82,847	611,028	581,111,390

* Subtotals and totals are weighted for representation of demographic groups in count of person-months of enrollment.

APPENDIX P. Combined Adjusted Demographic and Trend Estimats for Attributable Hospital Stays, Days of Stay and Costs, Point Estimates with Lower and Upper Bounds for 95% Confidence Interval by Type of Complication, Ethnicity, Gender and Age at End of Prior Year, Texas, 1995

		LOWER BOUND *			POINT ESTIMATE *			UPPER BOUND *		
	Age	Hospital Stays	Days of Stay	Cost	Hospital Stays	Days of Stay	Cost	Hospital Stays	Days of Stay	Cost
DIRECTLY ATTRIBUTABLE										
Hispanic Males	65-74	96	460	331,228	96	460	331,228	96	460	331,228
	75-84	25	110	87,897	25	110	87,897	25	110	87,897
	85+	4	13	15,927	4	13	15,927	4	13	15,927
	Subtotal	125	583	435,052	125	583	435,052	125	583	435,052
Hispanic Females	65-74	142	649	505,828	142	649	505,828	142	849	505,828
	75-84	52	210	186,735	52	210	186,735	52	210	186,735
	85+	9	51	27,628	9	51	27,628	9	51	27,828
	Subtotal	203	910	720,191	203	910	720,191	203	910	720,191
Black Males	65-74	143	687	526,402	143	687	526,402	143	687	526,402
	75-84	83	437	306,924	83	437	306,924	83	437	306,924
	85+	29	135	97,365	29	135	97,365	29	135	97,365
	Subtotal	255	1,259	930,691	255	1,259	930,691	255	1,259	930,691
Black Females	65-74	290	1,334	1,042,370	290	1,334	1,042,370	290	1,334	1,042,370
	75-84	202	1,095	879,935	202	1,095	879,935	202	1,095	879,935
	85+	79	468	292,064	79	468	292,064	79	468	292,064
	Subtotal	571	2,897	2,014,369	571	2,897	2,014,369	571	2,897	2,014,369
White/Other Males	65-74	557	2,510	1,843,374	557	2,510	1,843,374	557	2,510	1,843,374
	75-84	406	1,976	1,350,970	406	1,978	1,350,970	406	1,978	1,350,970
	85+	134	877	449,384	134	877	449,384	134	877	449,384
	Subtotal	1,097	5,163	3,643,728	1,097	5,163	3,643,728	1,097	5,183	3,843,728
White/Other Females	65-74	920	4,280	3,048,837	920	4,280	3,048,837	920	4,280	3,048,837
	75-84	811	4,235	2,752,026	811	4,235	2,752,028	811	4,235	2,752,026
	85+	290	1,537	917,666	290	1,537	917,666	290	1,537	917,666
	Subtotal	2,021	10,052	8,718,529	2,021	10,052	8,718,529	2,021	10,052	8,718,529
Subtotal Males	65-74	796	3,657	2,701,004	796	3,657	2,701,004	796	3,657	2,701,004
	75-84	514	2,523	1,745,791	514	2,523	1,745,791	514	2,523	1,745,791
	85+	187	825	562,678	187	825	562,676	167	825	562,676
	Subtotal	1,477	7,005	5,009,471	1,477	7,005	5,009,471	1,477	7,005	5,009,471
Subtotal Females	65-74	1,352	6,263	4,597,035	1,352	8,263	4,597,035	1,352	8,263	4,597,035
	75-84	1,065	5,540	3,818,696	1,065	5,540	3,618,696	1,065	5,540	3,818,696
	85+	378	2,056	1,237,358	378	2,056	1,237,358	378	2,056	1,237,358
	Subtotal	2,795	13,859	9,453,089	2,795	13,859	9,453,089	2,795	13,859	9,453,089
Total	65-74	2,148	9,920	7,298,039	2,148	9,920	7,298,039	2,148	9,920	7,298,039
	75-84	1,579	8,063	5,364,487	1,579	8,063	5,384,487	1,579	8,063	5,364,487
	85+	545	2,881	1,800,034	545	2,881	1,800,034	545	2,881	1,800,034
	Total	4,272	20,864	14,462,560	4,272	20,864	14,462,560	4,272	20,864	14,462,560
NEUROLOGICAL COMPLICATIONS										
Hispanic Males	65-74	87	519	369,642	78	580	425,996	88	633	474,724
	75-84	21	131	88,247	31	199	142,505	39	253	186,309
	85+	-44	-318	-250,639	-6	-42	-35,378	9	64	46,674
	Subtotal	88	647	454,361	106	756	547,263	122	852	629,456
Hispanic Females	65-74	119	748	551,898	126	790	588,235	132	827	620,027
	75-84	38	262	192,530	45	309	231,185	51	350	264,167
	85+	0	15	2,852	6	54	29,738	10	85	50,682
	Subtotal	162	1,059	776,607	173	1,129	832,922	183	1,192	884,266
Black Males	85-74	69	438	378,248	87	554	473,700	104	663	563,522
	75-84	16	171	87,127	37	310	175,081	56	434	271,572
	85+	-32	-227	-152,702	-4	-47	-22,858	17	90	78,318
	Subtotal	86	595	452,926	118	802	816,544	148	997	770,035
Black Females	65-74	249	1,799	1,421,522	269	1,923	1,523,000	287	2,038	1,618,847
	75-84	83	534	412,875	118	760	585,034	147	963	739,896
	85+	-39	-162	-177,040	5	87	34,000	42	297	211,310
	Subtotal	325	2,380	1,822,080	372	2,678	2,060,120	417	2,956	2,284,598
White/Other Males	65-74	763	4,410	3,772,873	792	4,566	3,915,123	820	4,718	4,054,333
	75-84	411	2,664	2,124,228	460	2,934	2,351,869	507	3,195	2,572,354
	85+	74	508	403,632	108	707	558,805	140	896	705,401
	Subtotal	1,281	7,755	8,456,854	1,340	8,082	8,737,225	1,398	8,403	7,012,833
White/Other Females	65-74	950	5,578	4,692,662	978	5,722	4,819,336	1,005	5,864	4,943,823
	75-84	712	4,648	3,407,898	771	4,984	3,687,329	829	5,311	3,960,063
	85+	132	1,025	694,837	195	1,400	988,720	256	1,761	1,271,448
	Subtotal	1,815	11,350	8,892,451	1,891	11,781	9,249,610	1,967	12,207	9,601,820
Subtotal Males	85-74	903	5,425	4,556,467	940	5,629	4,739,797	977	5,828	4,919,050
	75-84	462	3,094	2,370,311	518	3,407	2,631,945	572	3,710	2,885,459
	85+	-3	38	49,826	58	398	327,528	114	731	583,620
	Subtotal	1,434	8,967	7,306,512	1,508	9,382	7,660,870	1,580	9,790	8,006,985
Subtotal Females	65-74	1,310	8,156	6,889,026	1,346	8,352	8,839,517	1,382	8,545	7,006,512
	75-84	854	5,665	4,153,154	923	6,063	4,481,462	990	8,451	4,801,776
	85+	138	1,135	743,576	211	1,566	1,083,827	281	1,980	1,410,997
	Subtotal	2,270	14,742	11,419,461	2,365	15,282	11,865,613	2,458	15,815	12,305,245
Total	65-74	2,232	13,685	11,315,100	2,284	13,967	11,564,127	2,335	14,244	11,809,387
	75-84	1,353	8,966	6,696,922	1,441	9,471	7,114,970	1,527	9,965	7,524,981
	85+	179	1,430	988,769	271	1,979	1,419,255	361	2,508	1,834,586
	Total	3,753	23,982	18,957,746	3,872	24,662	19,524,825	3,990	25,334	20,065,496

APPENDIX P. CONTINUED

CARDIOVASCULAR - ARTERY COMPLICATIONS

Hispanic Males	65-74	28	270	238,001	32	301	274,838	38	328	306,691
	75-84	4	7	-11,449	7	28	11,714	9	44	30,415
	85+	-13	-111	-90,658	-1	-6	-10,178	4	34	20,498
	Subtotal	33	287	231,551	39	332	281,026	44	371	324,797
Hispanic Females	65-74	48	331	308,681	52	349	329,402	55	364	347,531
	75-84	13	84	82,445	16	87	98,868	19	107	112,918
	85+	0	-1	812	2	14	13,408	3	26	23,218
	Subtotal	64	408	408,959	69	439	436,777	73	467	462,140
Black Males	65-74	19	91	67,012	26	148	129,785	33	201	187,643
	75-84	-11	-129	-108,481	-2	-60	-46,152	5	2	9,559
	85+	-9	-87	-68,083	3	-3	1,511	12	61	54,669
	Subtotal	13	-22	-17,480	26	79	80,855	38	173	173,105
Black Females	65-74	39	285	308,820	49	339	360,641	58	389	408,750
	75-84	11	153	33,861	27	275	149,997	42	384	254,466
	85+	-26	-141	-178,092	-1	55	-8,920	20	219	133,212
	Subtotal	40	406	267,540	64	577	425,065	87	738	573,815
White/Other Males	65-74	143	685	296,657	161	1,012	510,544	178	1,137	719,861
	75-84	85	424	-76,943	66	577	131,267	108	726	332,931
	85+	17	195	151,713	29	280	226,938	40	381	298,004
	Subtotal	242	1,627	571,610	270	1,835	873,916	298	2,040	1,171,092
White/Other Females	65-74	285	1,844	1,302,649	299	1,922	1,402,846	312	1,998	1,500,959
	75-84	138	937	714,197	159	1,063	837,637	180	1,185	958,119
	85+	20	164	112,180	44	338	242,811	68	487	368,398
	Subtotal	453	3,014	2,208,012	464	3,198	2,398,095	514	3,379	2,585,545
Subtotal Males	65-74	181	1,192	424,117	202	1,345	871,675	223	1,498	914,123
	75-84	82	339	-197,875	85	513	28,601	108	681	248,049
	85+	-4	20	-4,895	17	175	130,468	37	319	255,297
	Subtotal	267	1,783	468,865	302	2,016	821,828	338	2,264	1,168,539
Subtotal Females	65-74	387	2,428	1,817,037	385	2,528	1,944,032	403	2,629	2,068,423
	75-84	182	1,343	999,593	208	1,500	1,152,544	233	1,654	1,301,770
	85+	24	299	157,552	54	494	323,393	82	681	482,858
	Subtotal	566	3,990	2,965,515	605	4,230	3,209,483	644	4,487	3,449,885
Total	65-74	557	3,666	2,294,060	585	3,645	2,555,035	612	4,022	2,812,061
	75-84	259	1,794	943,944	294	2,024	1,202,518	327	2,249	1,456,118
	85+	34	426	247,891	70	872	457,716	105	908	660,155
	Total	855	5,906	3,635,201	907	6,252	4,046,780	959	6,593	4,453,708

CARDIOVASCULAR - HEART COMPLICATIONS

Hispanic Males	65-74	280	1,435	1,438,604	310	1,590	1,590,319	337	1,725	1,721,505
	75-84	78	464	328,411	102	601	457,906	121	711	564,069
	85+	-99	-542	-473,086	-8	-42	-29,664	26	149	139,351
	Subtotal	365	1,937	1,809,602	410	2,179	2,041,797	450	2,394	2,247,224
Hispanic Females	65-74	377	2,215	1,814,685	403	2,342	1,938,391	425	2,454	2,042,873
	75-84	158	793	740,274	173	880	817,308	188	954	683,034
	85+	-2	-30	-12,444	16	80	76,493	30	166	145,770
	Subtotal	553	3,081	2,642,105	586	3,258	2,799,680	618	3,418	2,943,348
Black Males	65-74	252	1,436	1,587,349	292	1,642	1,795,312	329	1,833	1,988,988
	75-84	80	429	372,334	124	678	590,742	164	897	785,959
	85+	-72	-420	-322,396	-8	-53	-28,252	41	227	196,421
	Subtotal	333	1,857	1,989,526	403	2,234	2,335,743	468	2,587	2,660,535
Black Females	65-74	761	4,265	3,840,113	807	4,512	4,087,596	850	4,741	4,277,975
	75-84	264	1,562	1,260,807	338	1,989	1,617,075	405	2,374	1,937,552
	85+	-21	-151	-60,145	60	330	313,783	129	733	644,748
	Subtotal	1,076	6,079	5,369,300	1,177	6,652	5,860,358	1,273	7,193	8,323,433
White/Other Males	65-74	2,406	12,878	12,081,431	2,516	13,377	12,599,266	2,623	13,865	13,108,039
	75-84	1,341	7,902	6,477,182	1,487	8,623	7,133,574	1,626	9,321	7,789,333
	65+	156	789	750,460	255	1,318	1,198,309	349	1,618	1,621,401
	Subtotal	4,008	22,058	19,789,208	4,202	22,995	20,682,921	4,393	23,917	21,561,455
White/Other Females	65-74	3,495	19,644	16,321,820	3,578	20,025	16,683,546	3,659	20,399	17,038,456
	75-64	2,503	14,711	11,647,838	2,653	15,458	12,292,490	2,800	16,186	12,921,691
	85+	603	3,548	2,808,890	787	4,421	3,520,478	925	5,260	4,204,589
	Subtotal	6,662	38,152	31,042,616	6,887	39,168	31,929,018	7,069	40,170	32,803,139
Subtotal Males	65-74	2,681	15,562	14,885,846	3,011	16,164	15,508,479	3,139	16,754	16,117,265
	75-84	1,508	6,901	7,270,374	1,668	9,701	7,997,819	1,823	10,476	8,702,295
	85+	-57	-351	-187,553	113	566	585,049	271	1,411	1,297,528
	Subtotal	4,540	25,183	22,927,288	4,771	28,308	23,996,379	4,997	27,414	25,046,532
Subtotal Females	65-74	4,578	25,985	21,822,485	4,683	26,487	22,297,285	4,787	26,978	22,762,349
	75-84	2,944	17,333	13,647,289	3,118	18,202	14,594,809	3,285	19,049	15,324,130
	85+	648	3,817	3,086,544	831	4,803	3,890,597	1,007	5,751	4,663,739
	Subtotal	8,111	46,720	38,512,797	8,359	47,969	39,600,545	8,603	49,199	40,872,396
Total	65-74	7,511	41,803	36,943,928	7,677	42,578	37,713,518	7,642	43,342	38,471,468
	75-84	4,556	26,756	21,589,644	4,789	27,928	22,621,951	5,018	29,076	23,634,213
	85+	719	4,157	3,489,559	960	5,451	4,556,040	1,192	6,701	5,584,973
	Total	12,795	72,612	62,098,786	13,132	74,287	63,814,339	13,465	75,943	65,112,765

APPENDIX P. Continued

CARDIOVASCULAR - VEIN COMPLICATIONS

Hispanic Males	65-74	-1	4	-6,035	1	17	2,237	3	29	9,369
	75-84	2	13	12,521	3	19	18,014	4	24	18,834
	85+	-4	-25	-18,195	-1	-6	-4,564	0	1	631
	Subtotal	1	15	4,837	3	31	14,662	5	45	23,355
Hispanic Females	65-74	14	114	60,402	16	123	68,322	17	130	71,501
	75-84	-2	-7	-8,328	-1	-1	-3,979	0	4	-268
	85+	1	8	3,846	2	12	7,432	2	16	10,225
	Subtotal	14	122	60,792	16	133	68,531	18	143	75,588
Black Males	65-74	1	8	11,353	4	24	21,384	8	39	30,829
	75-84	-2	-30	-10,434	0	-15	-1,407	2	-1	6,662
	85+	-3	-26	-18,487	-1	-11	-7,554	1	2	797
	Subtotal	-1	-27	-3,390	3	-2	11,765	8	21	25,982
Black Females	65-74	6	54	33,428	10	81	49,482	13	106	64,291
	75-84	-6	-6	-10,830	0	28	8,792	4	56	28,443
	85+	-5	-11	-763	-1	19	15,869	3	43	29,844
	Subtotal	1	73	42,768	6	121	70,685	15	168	97,010
White/Other Males	65-74	52	371	147,772	59	411	172,970	65	450	197,630
	75-84	-1	18	-4,554	7	66	24,302	14	112	52,250
	85+	5	57	18,815	6	76	29,364	11	95	39,329
	Subtotal	64	488	168,468	74	551	226,888	84	813	264,655
White/Other Females	65-74	86	596	356,682	94	644	384,851	101	690	412,094
	75-84	31	202	133,920	42	275	174,088	53	347	213,294
	85+	15	96	82,772	25	181	97,346	34	223	130,565
	Subtotal	139	939	579,425	154	1,038	835,113	170	1,136	690,030
Subtotal Males	65-74	50	369	143,655	56	417	174,051	65	465	203,771
	75-84	-1	3	-1,708	7	56	29,816	18	106	60,362
	85+	-2	1	-13,697	3	36	5,694	7	68	23,578
	Subtotal	55	430	181,769	87	505	207,779	79	579	252,974
Subtotal Females	65-74	99	721	428,848	108	782	462,530	118	841	497,878
	75-84	24	191	119,656	36	274	165,655	49	355	210,535
	85+	14	114	79,120	24	185	117,598	35	254	154,598
	Subtotal	137	1,031	632,859	156	1,150	700,234	174	1,268	766,625
Total	65-74	154	1,124	590,181	166	1,201	637,034	178	1,277	683,178
	75-84	28	230	139,236	44	327	194,677	56	423	249,052
	85+	13	130	74,209	25	210	117,813	37	288	159,881
	Total	201	1,514	825,950	223	1,653	907,027	245	1,792	987,188

RENAL COMPLICATIONS

Hispanic Males	65-74	70	412	374,018	78	465	418,093	84	510	456,205
	75-84	12	120	71,419	19	166	105,428	25	203	132,885
	85+	-42	-199	-176,342	-4	43	2,413	11	135	70,548
	Subtotal	83	608	472,728	96	694	541,338	108	771	602,040
Hispanic Females	65-74	145	914	774,519	150	944	799,825	155	971	821,966
	75-84	51	325	233,208	55	381	260,227	60	392	283,280
	85+	10	100	47,878	18	143	71,543	20	177	89,977
	Subtotal	210	1,362	1,075,743	218	1,420	1,116,868	228	1,472	1,154,364
Black Males	65-74	61	330	307,208	70	401	362,444	79	466	413,355
	75-84	18	188	139,700	33	293	218,192	48	368	284,562
	85+	-36	-206	-143,604	-2	20	9,034	24	193	125,822
	Subtotal	74	529	454,178	98	691	572,597	121	643	683,689
Black Females	65-74	214	1,425	1,260,604	223	1,483	1,303,290	231	1,537	1,342,766
	75-84	136	1,037	683,882	159	1,178	789,507	180	1,304	884,539
	85+	17	126	106,900	56	368	282,877	89	605	430,727
	Subtotal	388	2,713	2,143,798	419	2,919	2,291,111	449	3,114	2,430,030
White/Other Males	65-74	327	2,177	1,813,190	340	2,249	1,874,698	353	2,319	1,934,892
	75-84	252	1,556	1,141,996	280	1,712	1,259,815	307	1,862	1,373,537
	85+	81	357	256,401	93	541	389,991	122	718	514,305
	Subtotal	652	4,150	3,264,759	688	4,345	3,415,856	720	4,537	3,564,386
White/Other Females	65-74	811	4,878	3,937,014	827	4,964	4,005,849	843	5,049	4,072,990
	75-84	752	4,591	3,388,604	788	4,798	3,535,415	824	5,000	3,680,660
	85+	198	1,341	824,393	257	1,877	1,061,201	313	2,000	1,268,865
	Subtotal	1,763	10,814	8,158,607	1,817	11,115	8,378,378	1,869	11,412	8,595,100
Subtotal Males	65-74	466	3,020	2,568,077	484	3,121	2,653,371	501	3,219	2,736,767
	75-84	298	1,982	1,437,707	331	2,170	1,579,002	362	2,352	1,715,912
	85+	-5	82	18,028	53	410	282,597	106	732	489,981
	Subtotal	813	5,389	4,259,129	858	5,649	4,459,323	902	5,905	4,655,971
Subtotal Females	65-74	1,159	7,198	5,945,804	1,160	7,312	6,036,080	1,201	7,423	8,124,505
	75-84	959	8,100	4,423,208	1,001	8,347	4,601,747	1,043	8,588	4,775,939
	85+	266	1,864	1,170,430	333	2,256	1,445,887	397	2,637	1,710,718
	Subtotal	2,336	14,870	11,350,512	2,402	15,248	11,826,163	2,487	15,622	11,897,765
Total	65-74	1,637	10,280	6,562,795	1,664	10,432	8,686,660	1,891	10,561	8,808,651
	75-84	1,278	8,208	5,954,664	1,332	8,516	6,181,405	1,384	8,819	6,403,785
	85+	302	2,182	1,368,721	389	2,892	1,726,407	472	3,184	2,071,501
	Total	3,160	20,435	15,743,393	3,259	20,892	16,082,673	3,337	21,344	16,418,120

APPENDIX P. Continued

ENDOCRINE/METABOLIC COMPLICATIONS										
Hispanic Males	65-74	8	34	25,288	7	38	27,564	7	42	29,533
	75-84	0	0	1,906	1	1	2,943	1	2	3,780
	85+	-4	-9	-14,359	1	10	3,072	2	17	9,718
	Subtotal	8	46	32,090	9	51	35,806	9	56	39,094
Hispanic Females	65-74	4	20	21,048	5	22	21,765	5	23	22,393
	75-84	0	-3	-2,194	0	0	75	1	2	2,010
	85+	0	-2	-1,271	0	-1	-477	0	0	141
	Subtotal	4	18	18,109	4	20	20,199	5	23	22,105
Black Males	65-74	1	-12	4,012	1	-8	5,731	2	-5	7,315
	75-84	0	-2	-864	1	2	1,889	2	5	4,349
	85+	0	-8	-3,374	1	-1	1,896	2	4	5,921
	Subtotal	2	-14	4,978	3	-8	8,981	4	-2	12,738
Black Females	85-74	12	52	47,536	12	55	49,072	12	58	50,492
	75-84	9	50	43,881	10	55	47,781	11	81	51,290
	85+	1	24	2,119	3	35	11,198	5	45	18,826
	Subtotal	23	131	97,078	25	140	103,353	26	149	109,272
White/Other Males	65-74	20	83	75,434	20	85	77,517	20	87	79,557
	75-84	8	45	28,104	7	49	28,763	7	52	31,339
	85+	2	0	3,104	2	3	5,821	3	7	7,999
	Subtotal	28	130	106,228	29	134	110,050	30	139	113,810
White/Other Females	65-74	40	170	171,831	40	172	173,430	41	174	174,999
	75-84	24	141	99,842	25	145	102,983	25	149	106,050
	85+	7	2	25,688	8	8	29,397	8	13	32,963
	Subtotal	71	314	298,386	72	320	302,873	73	326	306,901
Subtotal Males	65-74	28	115	108,279	29	119	111,238	29	123	114,128
	75-84	8	48	30,892	9	52	34,385	10	56	37,770
	85+	2	4	5,562	4	12	11,517	5	19	16,990
	Subtotal	40	175	150,784	41	182	156,370	42	189	161,856
Subtotal Females	65-74	56	249	241,783	57	252	244,029	57	255	246,230
	75-84	35	201	150,514	38	207	154,857	37	213	159,095
	85+	11	41	40,206	12	49	45,804	14	57	51,187
	Subtotal	102	487	429,270	103	495	435,587	105	504	441,812
Total	85-74	85	366	351,175	88	371	354,824	88	376	358,418
	75-84	43	252	183,720	45	259	189,270	48	266	194,713
	85+	15	51	50,515	18	82	56,175	18	72	65,566
	Totat	142	666	583,567	144	677	591,995	148	689	600,308
OPHTHALMIC COMPLICATIONS										
Hispanic Males	65-74	1	2	3,795	1	2	3,795	1	2	3,795
	75-84	0	0	0	0	0	0	0	0	0
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	1	2	3,795	1	2	3,795	1	2	3,795
Hispanic Females	65-74	2	7	5,266	2	7	5,266	2	7	5,266
	75-84	1	2	2,552	1	3	2,829	1	3	3,068
	85+	0	0	0	0	0	0	0	0	0
	Subtotat	3	9	7,812	3	9	7,973	3	10	8,121
Black Males	65-74	1	1	4,710	1	2	5,374	1	2	5,988
	75-84	-1	-2	-2,063	-1	-1	-1,495	0	-1	-988
	85+	0	0	0	0	0	0	0	0	0
	Subtotal	0	0	3,095	1	0	3,924	1	1	4,702
Black Females	65-74	4	12	13,962	4	12	14,166	4	12	14,356
	75-84	3	10	8,722	3	10	6,722	3	10	8,722
	85+	-1	-2	-1,910	0	-1	-1,188	0	-1	-581
	Subtotal	8	20	18,934	8	20	19,327	8	21	19,698
White/Other Males	65-74	4	17	10,471	4	18	11,510	4	19	12,525
	75-84	2	22	658	3	23	2,435	3	25	4,156
	85+	1	1	478	1	1	827	1	2	1,157
	Subtotal	7	41	13,244	8	42	15,112	8	44	18,948
White/Other Females	65-74	18	81	53,728	18	62	55,260	17	63	56,764
	75-84	3	27	10,153	4	29	11,829	4	30	13,464
	85+	2	14	5,707	3	15	8,857	3	16	7,962
	Subtotal	22	103	71,128	23	105	73,614	24	107	78,064
Subtotal Males	65-74	8	20	18,468	8	21	19,738	8	22	20,980
	75-84	1	20	-1,579	2	21	338	2	23	2,195
	85+	1	-1	-256	1	0	271	1	1	756
	Subtotal	8	40	18,068	9	42	20,287	9	44	22,427
Subtotal Females	65-74	21	78	68,848	21	78	70,614	22	79	72,345
	75-84	7	38	17,535	7	40	19,304	8	41	21,030
	85+	2	12	4,411	2	14	5,706	3	15	6,952
	Subtotal	29	127	91,849	30	130	94,640	31	132	97,391
Total	85-74	27	97	88,323	27	99	90,478	28	100	92,597
	75-84	8	59	17,188	9	81	19,750	10	63	22,263
	85+	3	12	4,311	3	14	5,728	3	15	7,091
	Totat	38	189	111,352	39	172	114,897	40	175	118,401

APPENDIX P. Continued

OTHER COMPLICATIONS										
Hispanic Males	65-74	8	34	26,188	7	37	30,985	6	39	33,404
	75-84	4	11	12,417	4	12	13,046	4	13	13,555
	85+	-7	-29	-26,216	0	0	-132	2	11	9,611
	Subtotal	10	49	43,001	11	53	47,530	13	57	51,538
Hispanic Females	65-74	8	35	26,435	10	40	35,406	12	45	41,506
	75-84	4	41	22,471	5	45	26,320	6	48	29,604
	65+	0	1	120	1	4	4,076	2	7	7,180
	Subtotal	14	81	56,810	17	88	65,082	19	95	72,623
Black Males	65-74	4	8	10,571	4	10	12,241	5	11	13,760
	75-84	0	-1	1,414	1	1	2,880	1	3	4,190
	85+	0	-1	-856	0	-1	-408	0	0	-65
	Subtotal	4	8	12,567	4	10	14,771	5	12	16,840
Black Females	65-74	14	78	47,584	15	61	51,414	16	65	54,957
	75-84	-3	-18	-9,807	-1	-9	-4,199	0	-3	845
	65+	0	3	1,968	2	9	6,512	3	13	10,330
	Subtotal	13	70	45,279	15	79	52,636	17	88	59,573
White/Other Males	65-74	28	116	101,630	30	125	108,264	32	131	114,756
	75-84	12	53	40,382	15	68	50,438	16	79	60,178
	65+	14	74	50,225	16	62	56,784	16	69	62,980
	Subtotal	55	254	199,383	59	269	211,955	63	283	224,312
White/Other Females	65-74	65	268	230,965	70	267	246,331	74	305	261,407
	75-84	35	156	135,857	41	185	156,116	48	211	175,693
	65+	8	69	37,229	12	67	51,353	17	105	64,932
	Subtotal	112	515	419,969	121	550	447,787	130	566	475,219
Subtotal Males	65-74	37	156	137,184	39	164	145,022	41	172	152,686
	75-84	14	60	51,304	16	74	61,761	21	87	71,932
	65+	10	63	40,523	14	76	51,653	17	67	61,917
	Subtotal	65	294	242,484	70	311	256,970	74	326	271,218
Subtotal Females	65-74	79	347	265,460	85	370	304,517	91	393	323,183
	75-84	33	170	141,337	40	200	163,917	47	229	165,946
	65+	9	76	43,223	14	96	56,657	19	115	73,669
	Subtotal	124	603	479,546	135	645	512,380	145	686	544,733
Total	65-74	120	518	434,234	126	540	453,481	132	562	472,438
	75-84	50	239	200,156	57	271	224,321	65	303	246,021
	85+	21	146	90,916	26	170	110,009	34	193	128,427
	Total	193	912	733,562	204	954	768,061	215	997	802,169
UNRELATED CONDITIONS										
Hispanic Males	65-74	963	6,621	9,084,549	1,214	10,479	11,280,637	1,430	12,085	13,179,929
	75-84	272	2,354	2,513,677	441	3,664	3,638,646	576	4,723	4,908,363
	85+	-611	-4,741	-4,161,385	-61	-457	-364,550	146	1,176	1,090,283
	Subtotal	1,276	11,314	12,060,384	1,622	13,906	14,908,611	1,926	16,199	17,428,880
Hispanic Females	65-74	1,599	13,668	15,454,411	1,799	15,207	16,983,663	1,975	16,378	18,284,129
	75-84	494	4,835	4,082,431	819	5,546	5,002,116	725	6,323	5,786,611
	65+	102	855	755,397	176	1,443	1,261,162	238	1,901	1,655,125
	Subtotal	2,363	20,475	21,562,570	2,595	22,100	23,272,383	2,807	23,560	24,631,263
Black Males	65-74	953	6,840	6,755,660	1,215	10,691	11,023,085	1,456	12,782	13,112,715
	75-84	284	2,486	2,220,767	563	4,706	4,416,917	612	6,690	6,379,878
	65+	-221	-1,583	-1,818,061	110	970	592,729	363	2,920	2,434,136
	Subtotal	1,435	13,017	12,391,905	1,664	16,392	15,690,616	2,267	19,559	19,172,616
Black Females	65-74	2,542	20,638	21,094,044	2,845	22,937	23,615,569	3,126	25,063	25,947,509
	75-84	1,089	9,712	8,601,930	1,485	12,676	11,447,353	1,603	15,342	14,006,922
	65+	24	440	277,752	425	3,575	3,023,403	762	6,209	5,330,206
	Subtotal	4,056	33,917	33,142,617	4,818	38,252	37,447,004	5,145	42,341	41,506,152
White/Other Males	65-74	9,770	77,892	69,188,659	10,477	82,517	95,373,619	11,169	67,042	101,426,636
	75-84	4,946	41,202	38,668,376	5,768	46,986	45,026,409	6,565	52,569	51,164,579
	65+	1,044	9,387	7,741,176	1,539	12,664	10,954,695	2,006	16,150	13,990,956
	Subtotal	16,411	132,968	141,146,173	17,557	140,746	150,386,015	18,683	148,397	159,466,947
White/Other Females	65-74	12,568	103,591	105,729,119	13,295	108,315	111,130,739	14,008	112,950	118,430,562
	75-84	6,373	70,284	82,500,277	9,289	76,738	69,005,274	10,163	63,034	75,354,363
	85+	2,411	19,301	14,715,746	3,208	24,924	19,704,353	3,975	30,329	24,500,325
	Subtotal	24,015	197,515	188,201,978	25,353	208,653	197,636,439	26,672	215,664	206,940,184
Subtotal Males	65-74	11,418	94,562	104,638,663	12,266	100,260	112,072,385	13,098	105,812	119,340,792
	75-84	5,632	47,488	44,495,419	6,546	53,990	51,567,188	7,431	60,293	56,419,493
	85+	131	3,200	1,749,677	988	9,307	7,400,141	1,779	14,938	12,610,889
	Subtotal	16,331	153,357	159,436,843	19,704	162,833	170,524,615	21,053	172,141	181,415,983
Subtotal Females	65-74	15,822	133,441	138,569,462	16,734	139,452	143,414,884	17,626	145,340	150,119,940
	75-84	9,905	65,155	75,330,244	10,943	92,538	82,743,626	11,956	99,738	69,976,522
	85+	2,865	23,460	18,218,625	3,755	29,801	23,833,787	4,611	35,899	29,234,997
	Subtotal	28,881	243,418	233,519,216	30,481	254,468	244,697,108	32,056	265,359	256,106,710
Total	65-74	27,733	231,280	244,796,900	28,977	239,527	254,845,047	30,203	247,648	264,741,165
	75-84	16,138	136,906	124,425,698	17,511	146,885	134,575,859	16,659	156,275	144,530,671
	65+	3,652	31,332	24,372,313	4,833	39,749	31,929,771	5,973	47,869	39,221,157
	Total	48,068	402,615	399,801,580	50,191	417,338	415,594,177	52,271	431,694	431,208,333

APPENDIX P. Continued

TOTAL										
Hispanic Males	65-74	1,515	11,792	11,887,277	1,824	13,970	14,385,893	2,091	15,853	18,546,402
	75-84	418	3,209	3,103,048	833	4,799	4,876,098	806	6,082	5,946,107
	85+	-819	-5,961	-5,214,954	-77	-486	-423,053	208	1,601	1,403,440
	Subtotal	1,991	15,488	15,547,401	2,422	18,587	18,857,080	2,803	21,331	21,785,230
Hispanic Females	65-74	2,458	18,900	19,525,171	2,705	20,473	21,252,103	2,920	21,849	22,763,020
	75-84	806	8,324	5,532,124	966	7,440	6,621,707	1,103	8,393	7,551,358
	85+	120	998	824,819	229	1,802	1,491,004	314	2,428	2,009,928
	Subtotal	3,589	27,528	27,329,698	3,884	29,504	29,340,607	4,153	31,307	31,174,027
Black Males	65-74	1,504	11,827	11,650,723	1,844	14,351	14,355,438	2,158	18,678	16,848,335
	75-84	465	3,548	2,986,424	838	6,349	5,661,570	1,172	8,852	8,052,669
	85+	-344	-2,426	-2,430,197	128	1,009	643,463	488	3,632	2,991,183
	Subtotal	2,202	17,201	18,218,992	2,775	21,457	20,466,490	3,313	25,450	24,451,134
Black Females	65-74	4,130	29,940	29,109,783	4,523	32,757	32,076,580	4,887	35,363	34,820,313
	75-84	1,788	14,131	11,703,236	2,319	18,057	15,327,998	2,797	21,588	18,588,812
	85+	29	594	242,852	628	4,982	3,969,599	1,131	8,633	7,100,686
	Subtotal	6,499	48,687	44,963,762	7,275	54,335	50,344,024	8,006	59,662	55,417,751
White/Other Males	65-74	14,069	101,340	109,331,491	14,955	106,868	118,487,085	15,823	112,278	123,489,803
	75-84	7,440	55,862	49,748,398	8,518	83,012	57,359,641	9,562	69,937	64,731,628
	85+	1,507	12,043	9,827,389	2,184	16,551	13,870,918	2,824	20,809	17,690,918
	Subtotal	23,844	174,633	175,381,653	25,323	184,165	186,303,668	28,776	193,536	197,040,166
White/Other Females	65-74	19,237	140,911	135,845,505	20,117	146,394	141,950,625	20,980	151,773	147,940,711
	75-84	13,382	99,934	84,788,812	14,584	107,907	92,555,189	15,757	115,689	100,135,823
	85+	3,686	27,117	20,204,908	4,809	34,568	26,620,183	5,889	41,731	32,787,733
	Subtotal	37,073	272,768	248,591,098	38,803	283,981	257,769,254	40,508	295,040	268,792,532
Subtotal Males	65-74	16,763	124,097	130,181,781	17,831	130,897	138,796,958	18,876	137,546	147,220,565
	75-84	8,499	64,456	57,200,635	9,697	72,507	65,678,465	10,858	80,307	73,889,258
	85+	239	3,881	2,217,909	1,417	11,805	9,337,594	2,504	19,131	15,903,229
	Subtotal	27,032	202,604	199,983,194	28,807	214,235	213,113,872	30,550	225,660	228,011,958
Subtotal Females	65-74	24,841	184,863	178,443,586	25,953	191,876	186,210,523	27,041	198,748	193,818,198
	75-84	16,006	121,738	102,801,226	17,376	130,909	111,696,616	18,712	139,858	120,375,439
	85+	4,355	32,873	24,779,044	5,615	41,321	32,042,794	6,827	49,444	39,027,288
	Subtotal	45,351	339,844	308,854,115	47,431	353,477	322,394,843	49,481	368,912	335,737,671
Total	65-74	42,204	312,738	312,674,736	43,741	322,479	324,198,241	45,255	332,072	335,547,417
	75-84	25,291	191,473	165,516,057	27,100	203,605	177,689,206	28,874	215,504	189,628,305
	85+	5,483	42,747	32,487,240	7,141	53,879	42,180,946	8,740	64,619	51,533,370
	Total	73,516	549,874	516,953,719	76,244	567,750	535,707,333	78,940	585,424	554,249,047

* Subtotals and totals are weighted for representation of demographic groups in count of person-months of enrollment.

APPENDIX Q. Hospital Stays, Days of Stay, and Costs According to Five Numerator Methods for Attributing Care of Elderly Non-HMO Medicare Beneficiaries to Diabetes by Ethnicity, Gender and Age at End of Prior Year, Texas, 1995

	Age	Principal Diagnosis	Clearly Attributable	Clearly or Probably Attributable	Principal or Secondary Diagnosis	All Care for Persons with Diabetes
HOSPITAL STAYS						
Hispanic Males	65-74	262	264	1,228	2,195	2,518
	75-84	67	68	395	728	887
	85+	16	16	90	128	172
Hispanic Females	65-74	308	306	1,582	3,065	3,386
	75-84	95	95	608	1,038	1,217
	85+	16	16	105	222	295
Black Males	65-74	329	329	1,378	2,702	3,118
	75-84	169	169	789	1,469	1,822
	85+	66	66	222	441	557
Black Females	65-74	593	594	3,101	5,842	6,582
	75-84	399	399	2,074	3,619	4,279
	85+	153	153	717	1,312	1,612
White/Other Males	65-74	1,514	1,514	10,989	19,996	23,342
	75-84	909	910	6,974	13,024	15,708
	85+	256	256	1,540	3,089	3,827
White/Other Females	65-74	1,866	1,869	12,988	25,727	29,434
	75-84	1,392	1,399	10,738	20,443	24,180
	85+	467	468	3,740	7,307	9,044
Total		8,875	8,891	59,258	112,345	131,978
95% Confidence Interval	+/-	183	183	451	587	621
DAYS OF STAY						
Hispanic Males	65-74	2,021	2,073	8,813	16,150	18,870
	75-84	518	525	2,797	5,408	6,684
	85+	167	167	709	1,005	1,347
Hispanic Females	65-74	2,138	2,138	10,817	21,882	24,823
	75-84	863	863	4,289	7,580	9,188
	85+	124	124	771	1,721	2,285
Black Males	65-74	2,611	2,611	9,560	20,565	23,808
	75-84	1,250	1,250	5,235	11,020	13,724
	85+	432	432	1,468	3,152	4,132
Black Females	65-74	3,888	3,900	20,612	41,424	47,487
	75-84	2,825	2,825	14,562	27,039	32,540
	85+	1,025	1,025	4,806	9,838	12,145
White/Other Males	65-74	10,750	10,750	69,872	133,848	159,172
	75-84	8,268	6,291	44,688	90,109	110,685
	85+	1,704	1,704	9,951	21,455	27,489
White/Other Females	65-74	12,417	12,436	81,725	176,016	204,442
	75-84	9,008	9,071	67,925	142,772	171,555
	85+	2,848	2,854	23,041	49,625	62,660
Total		60,857	61,039	381,441	780,609	933,038
95% Confidence Interval	+/-	1,198	1,201	2,887	4,191	4,735
COST						
Hispanic Males	65-74	1,860,871	1,889,559	10,267,331	17,300,472	20,007,199
	75-84	517,408	529,865	2,824,059	5,351,321	6,541,718
	85+	141,234	141,234	593,615	871,880	1,181,542
Hispanic Females	65-74	1,842,150	1,842,150	11,786,622	22,841,382	28,027,336
	75-84	611,478	611,478	3,865,276	6,954,958	8,326,853
	85+	97,804	97,804	585,638	1,447,766	1,891,743
Black Males	65-74	2,330,063	2,330,063	9,968,367	21,168,867	24,488,798
	75-84	1,135,939	1,135,939	4,968,973	10,219,958	12,705,224
	85+	420,380	420,380	1,390,254	2,747,535	3,438,813
Black Females	65-74	3,700,089	3,712,990	21,168,402	41,570,529	47,587,795
	75-84	2,291,367	2,291,367	12,957,257	23,938,319	28,701,164
	85+	960,102	960,102	4,056,060	8,305,230	10,096,933
White/Other Males	65-74	10,416,614	10,416,614	91,571,780	155,035,149	184,188,247
	75-84	5,516,785	5,528,253	47,312,017	88,533,201	108,110,405
	85+	1,512,498	1,512,498	8,789,294	18,866,620	23,683,439
White/Other Females	65-74	10,257,383	10,269,869	88,899,820	178,353,494	206,593,649
	75-84	7,421,700	7,489,250	63,289,830	129,105,880	154,554,938
	85+	2,226,167	2,236,904	18,402,470	40,825,612	50,808,742
Total		53,260,032	53,416,319	402,695,065	773,436,171	918,934,538
95% Confidence Interval	+/-	1,002,954	1,003,857	3,915,174	4,956,701	5,559,974

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